...Index to Contents, June, 1939...

The Annual Index for each volume is published in the December issue

Air-Conditioning
World's Largest Circus Air-Conditioned ... 161

Airports
Carbide Lights Speed New York Airport Job ... 153

Business and Industrial Development
Symbol of the Wealth and Spirit of Birmingham, Ala. ... 127

Celebrations
Celebration Dedicates Symbol of City's Wealth and Spirit ... 127

City Advertising
Truth in Civic Advertising Can Be Attractive ... 104

City Manager Appointments
Recent City Manager Appointments ... 133

Civil Service
Model Anti-Spoils Law ... 97

Conventions
Conventions—When and Where ... 147

Drainage
Book on Subdrainage Pipe ... 151

Finance and Taxation
A Ringing Challege by a Forward-Looking Mayor ... 91
Gary Establishes Centralized Purchasing ... 123
How the 48 States Tax Motor Vehicles and Gasoline ... 127
The Municipal Bond Market ... 133

Fire Prevention and Control
Just a Precaution to Keep the Fire Next Door from Spreading ... 15
Tank Trucks for Sure-Fire Water ... 86
Hydrant Inspection and Flushing ... 102
Snow Loaders and Fire Engines! ... 103
A Municipal Truck for All Emergencies ... 107

Forward Steps
Items Contributed by Officials and Others 123

Government and Administration
Important Resolutions Adopted by the U. S. Conference of Mayors ... 5
Apprentices Train for City Hall Jobs in 18 Cities ... 81
A Ringing Challenge by a Forward-Looking Mayor ... 91
Insurance Required on City-Used Private Autos ... 106
City Governments and Civil Liberties ... 121

Health and Sanitation
The Pandemic of 1918 ... 13
Food-Handler Examinations Relaxed ... 13
Educational Work Reduces Diphtheria ... 13
Precautions Against Yellow Fever Cases ... 13
Full-Time Health Service ... 13
Care of Water and Milk Reduces Typhoid 13
Sanitation Mounties ... 86

Housing
229 Cities Now Have Public Housing Authorities ... 131

Legal Decisions
Court Decisions Affecting Municipalities. 141

Lighting, Outdoor
Profitable Floodlighting ... 7
Putting the Fair's Kw's End to End ... 7
Low-Cost Searchlight for Spot Floodlights 151
Carbide Lights Speed New York Airport Job ... 153
Lower Speed Limit at Night ... 163
Floodlighting ... 165
"Many Moons" ... 167
Black Surface Well Lighted ... 167
Young Business Men for Better Street Lighting ... 167

Motor Equipment
Scraper Aids in Disposal of Sludge ... 11
Emergency Trucks Patrol 12 Cleveland Zones ... 15
Sanitation Mounties ... 86
Tank Trucks for Sure-Fire Water ... 87
Snow-Loaders and Fire Engines! ... 103
A Municipal Truck for All Emergencies ... 107
Novel Truck Parade of Refuse Collectors 151
New Low-Loading Refuse Truck Bodies ... 157

News and Illustrations
Hints for Officials ... 149

Parking Meters
Placing Parking Meters Where Needed ... 7

Parks and Recreation
Hershey Ten-Acre Stadium Is Opened ... 123

Planning and Zoning
Realty Development for Service Must Replace Speculation ... 117
The American Institute of Planners Presents "The City" ... 129
Public Land Policy for Community Reclamation ... 131
Zoning and Planning Notes ... 139

Police
Milwaukee's Police Record ... 15
Emergency Trucks Patrol Twelve Cleveland Zones ... 15

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Power Plants
Diesels Ordered for Clinton, Mich. ... 159

Publications
Municipal and Civic Publications ... 143

Public Utilities
Trend Toward Lower Utility Rates Shown by Surveys ... 117
Speedier Utility Rate Decisions Made Possible ... 133

Public Works
Programming Public Works ... 99

Sewers and Sewage Disposal
Scraper Aids in Disposal of Sludge ... 11
Protozoa as Indicator of Stream Pollution 11
Water-Main Cleaning Methods Used in Outfall Sewer ... 71
Saving a Segment Block Sewer with Gunite Lining ... 80
Gas Digester Engines, Columbus, Ohio ... 155

Street Cleaning and Snow Removal
Cleaning Vacant Lots and Streets in Pasadena, Calif. ... 98
Snow Loaders and Fire Engines! ... 103
School Pupils Urge Little Receptacles for City Streets ... 125

Street Construction and Maintenance
Low-Cost Paving in Red Oak, Iowa ... 85
Street Widening and Repaving in Charlotte, N. C. ... 89
Dual Asphalt Plants ... 105
New Model Offered of Sanding Machine 151

Swimming Pools
Swimming Pool Filters, Pumps and Accessories ... 155

Traffic Control and Facilitation
Jail the Pedestrian? ... 7
Traffic Signals Prove Worth in Altoona ... 15
Hire Traffic Consultants ... 90
Traffic Engineers Needed ... 90
Do Something for Pedestrians ... 135
Why Not for All Grade Crossings? ... 137
New R. R. Crossing Guard Has Hydraulic Snubber ... 149
Traffic Lane Markers ... 161

Transportation
Transportation as an Element in Urban Rehabilitation ... 88

Waste Collection and Disposal
Modern Garbage Disposal—Incineration or Burial? ... 100
Novel Truck Parade of Refuse Collectors 151
New Steel Clamshell for Handling Garbage ... 155
New Low-Loading Refuse Truck Bodies 157
Welded Steel Barges for Moving City Ashes ... 159

Water Supply and Purification
Easier Water Billing ... 7
Water Pipe Maintenance in Chicago, Ill. 9
Chemicals Regulated in Domestic Services 9
Old Water-Main Joints Melted for Re-Use ... 9
Water-Main Cleaning Methods Used in Outfall Sewer ... 71
Sacramento Filtration Plant Built in Duplicate ... 74
New Softening Plant, Clarksburg, W. Va. 78
Rehabilitation of the Hammond Water Works ... 82
Water Rates and Service Charges ... 93
Hydrant Inspection and Flushing ... 102
Priming Equipment for Centrifugal Pumps ... 149
Valuable Booklet on Water-Meter Practice 153
New Chemical Feeder for City Water Works ... 153
Propeller-Type Meter on Feeder ... 161

Works Progress Administration
How Can the Work Relief Program Be Improved? ... 76

See pp. 17, 19, 21, 22, 24, 143, 145, 147 for catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 172

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UNIFORM

MOVES PROPORTIONALLY TO RATE OF FLOW

The primary requisite in the selection of filtration plant equipment must be its ability to operate satisfactorily under the required operating conditions with a minimum of maintenance and supervision.

• ***Operating Floor Charlotte, N. C., Filter Plant.***
J. B. Marshall, Consulting Engineer.
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Be It Resolved—by the Mayors

*Important Resolutions Adopted by the U. S. Conference of Mayors**

FEDERAL WORK RELIEF PROGRAM

BASIC work relief principles which must be given consideration in any permanent legislation:

I. Providing work instead of the dole constitutes the American way of meeting the needs of the destitute employable unemployed;

II. Any formula for distribution of Federal *funds* among the states, if the present system of apportioning *jobs* is to be abandoned, must take into account the varying wage rates and costs of living in the respective states;

III. Due to different conditions prevailing in the cities of the United States, it should be made clear that adoption of any fixed percentage formula for local sponsors' contributions on the work relief program would lead to a collapse of such program;

IV. Adequate provision must be made for the so-called white-collar and professional groups;

V. A work program administered by the Federal Government itself in close cooperation with the local governments, instead of 48 different systems handled through the 48 Governors and state governments, is more efficient, more economical, and more responsive to the needs of the unemployed in our American cities.

Since relief constitutes a continuing problem of government, every effort should be made to put Federal relief expenditures on a pay-as-you-go basis.

Realizing that the ultimate solution of our relief and unemployment problem is employment in *private industry*, we urge the President and the Congress to give every aid and encouragement to business and industry.

TAXATION OF MUNICIPAL BONDS

Whereas, Federal taxes on income derived from state and municipal securities would be reflected in higher interest rates upon bonds issued by the states and their municipalities, and such increase would result in increasing the tax burden of citizens of the states and municipalities issuing bonds; and *whereas*, such legislation does violence to the fundamental concepts of the sovereign powers of the states, this Conference condemns any attempt on the part of the Federal Government to tax municipal bonds. If Congress should finally determine to tax municipal bonds, such action should not be attempted unless and until the consent of the states is obtained through a proper constitutional amendment.

AIRPORTS

Congress, in the Civil Aeronautics Act of 1938, having recognized the necessity of early action with a view toward developing a national system of airports and fixing the respective financial responsibilities of the Federal Government and the cities for constructing and maintaining air terminals; and a special committee of the United States Conference of Mayors having proposed a plan under which the Federal Government is responsible for all air navigation facilities (including all lighting, communications, meteorological, and runway requirements), and the cities are responsible for land, buildings, and management, which follows the basic pattern of the rivers and harbors policy of the Federal Government, the Conference reaffirms the recommendations of its special committee and submits same to the President, the Civil Aeronautics Authority, and the proper Congressional Committees.

LABOR

Jurisdictional strife in the ranks of labor is destructive of the rightful aims of labor, the present and future of business and industry, and the well-being of the nation as a whole. The cities are constantly confronted with the confusion, turmoil, and cost of jurisdictional labor disputes and have witnessed the enormous losses sustained by labor, industry, and business by such disputes, when no difference actually existed between employer and employee.

The Conference deplores the continuing jurisdictional quarrel and strife and urges that the A. F. of L. and the C.I.O., setting aside personal feeling and organization pride, bring about at the earliest possible moment, peace and good-will in the ranks of those who labor and serve.

HOUSING

Public housing having now come to represent an accepted function of government in most of the cities of the country, as is evidenced by the existence of over 200 municipal housing authorities, the Conference petitions Congress to act favorably on the pending legislation providing for a continuing housing program, as carried out under the U. S. Housing Authority.

FEDERAL AID TO CITY STREETS

Since interstate traffic on city streets constitutes a substantial amount of the travel within cities, and the need for adequate highway and street improvements and facilities has never been given proper recognition in the Federal highway program, the Conference petitions the U. S. Bureau of Public Roads to amend its rules and regulations in order that an equitable share of the Federal highway funds be apportioned for needed facilities within municipal corporate limits.

COMPETITION FOR CONVENTIONS

The competition between the cities for conventions has grown to such an extent that some cities offer inducements in the way of free use of municipal auditoriums for revenue-producing expositions. As it is desirous, therefore, to have a code of ethical procedure among cities administering auditoriums, the President of the United States Conference of Mayors is requested to appoint a committe to meet with a similar committee of the Auditorium Managers' Association to devise ways and means for speedily and effectively putting an end to the practice of giving away municipal auditoriums for conventions.

TRUCKS ON CITY STREETS

Referred to the Executive Committee for study and consideration was a resolution pointing out that *whereas*, the ever increasing weight of truck loads is constantly pyramiding the cost both of construction and of maintenance of all roads and streets, and this constantly augmented demand upon the states for road funds has been one of the chief causes for the states' depriving local governments of their just share of revenues, the Executive Committee be requested to secure either Federal provisions or such state enactments as it may deem best to provide for a gradual though substantial reduction in the weight of trucks and loads using city streets and state and Federal highways.

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*At the annual meeting of the United States Conference of Mayors, held in New York, May 15-17, at which the resolutions here summarized were adopted, officers and trustees were re-elected as follows: President—Mayor F. H. LaGuardia of New York City; Vice-President—Mayor Edward J. Kelly of Chicago; Trustees and Executive Committee Members—Mayors Harold H. Burton of Cleveland, Watkins Overton of Memphis, Angelo J. Rossi of San Francisco, and Ross D. Rogers of Amarillo; Chairman of the Advisory Board—Mayor Joseph D. Scholtz of Louisville. Paul V. Betters is Executive Director at 730 Jackson Place N.W., Washington, D. C.

He's *Carrying* Quite a Load

TAXES are necessary—you couldn't run a city, state or government without them. But they do mount up.

Fact is, a considerable part of the money you pay us for telephone service goes right out in taxes.

Bell System taxes for 1938 were $147,400,000—an increase of 56% in three years. In 1938 taxes were:

Equal to about $550 a year per employee

Equal to $9.50 per telephone in the Bell System

Equal to $7.54 per share of A. T. & T. common stock

BELL TELEPHONE SYSTEM

You are cordially invited to visit the Bell System exhibit at the Golden Gate International Exposition, San Francisco

Our Municipal Notebook

Jail the Pedestrian?

"IS the personal liberty of pedestrians any more sacred than that of motorists?" asks Robert A. Mitchell in the Traffic Control section of this issue. The answer is yes. The pedestrian is nothing at all except a human being, and his rights are paramount to any other rights. When this pedestrian steps out of the ranks and takes the helm of a vehicle weighing from 15 to 300 times his own weight, than it is not his *personal liberty* with which we are concerned as much as his *personal responsibility* to avoid direct contact with pedestrians or other vehicles. This does not mean, of course, that the pedestrian is to be encouraged in recklessness. Carelessness and negligence when seen by an officer can bring a memorable reproof.

He Helped the Small Municipality

WHEN 250 of his associates, scattered from coast to coast, assemble at their own expense to honor a man, there's a reason. That happened on May 1 to E. J. Ferris, 34 years with his company and 25 years manager of the New York office of the Addressograph - Multigraph Corporation.

What was the reason? It must have been more than good fellowship and more than sheer business ability. Perhaps the following incident suggests the key. Two years ago, reading a report on municipal office mechanization, Mr. Ferris urged that more attention be directed to the requirements of small municipalities. They, as well as the great cities, must prepare tax rolls and tax and water bills. What could be done to reduce that drudgery?

As a result of his suggestion, the report was recast to include a description of how 50 municipalities, each with a few hundred to a few thousand real-estate parcels, were using addressing equipment and in some instances bookkeeping machines. Since then, many more small municipalities have purchased modern office equipment.

E. J. Ferris, New York Manager, Addressograph-Multigraph Corporation

SUMMONSES FOR PARKING

Under the majority opinion of Justices Bayes and Burlingame of the Appellate Term of the Court of Special Sessions, a Jamaica motorist has had returned to him by the city a two-dollar fine imposed in Traffic Court as a result of a tag summons placed on his parked car during his absence. The legal bureau of the Police Department reports that there have been many actions instituted on like grounds—namely, that it is illegal for a policeman to serve a summons for improper parking except on the motorist in person—but that it has never before lost such a case. One of the most difficult factors in the city's problem of maintaining an orderly flow of traffic is control of the illegal parker. Certainly, no further obstacles should be placed in the way of the overburdened police. Should the interpretation of Justices Bayes and Burlingame be sustained, then the law itself should be changed.

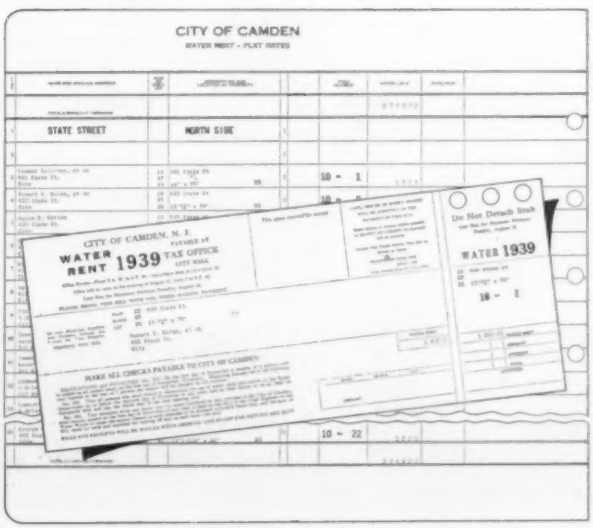
Placing Parking Meters Where Needed Would Produce Orderly Parking and Facilitate the Policeman's Job

Profitable Floodlighting

OBVIOUSLY not anywhere nearly enough floodlight is employed either by cities on their monuments and public buildings or in the cities by business men and industries. Large increases in intelligently-conceived and installed floodlighting in a city, should vastly increase the attractive power of that city. The subject is discussed on page 165 of this issue.

Putting the Fair's Kw's End to End

THAT almost everything is possible is quickly proved by things that are done. Much cogitation could be devoted to the feasibility of a coast-to-coast safety-lighted highway. Yet the power consumed by the Golden Gate Exposition in San Francisco would do it, says A. F. Dickerson, Manager, Illuminating Laboratory and Lighting Sales, General Electric Co., and the combined electric power loads of the Golden Gate and New York Fairs could light 10,000-lumen sodium-vapor highway lamps spaced 200 feet apart on two coast-to-coast highways and six Canada - to - Mexico highways. Of course the Fairs have the apparent advantage of paying their way, at the gates or in the business establishments of the cities in which they are held. These two Fairs may gross 60 million dollars this year and bring a billion dollars' worth of business to the cities in which they are held. But street and highway lighting also pay, and 2,000 lives *not* sacrificed on 15,000 miles of lighted transcontinental boulevards would be a definitely worth-while saving.



EASIER WATER BILLING

This year the Camden, N. J., water duplicate and water bills are prepared by the Sundstrand Class D accounting machines in the City Comptroller's department

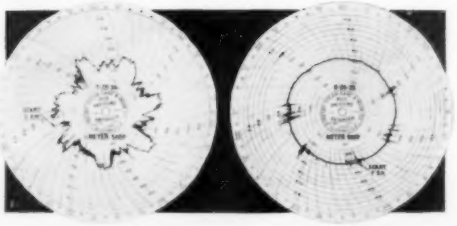
ELEVATED STORAGE *Improves Distribution Pressures* at BLUE ISLAND, ILLINOIS

BLUE ISLAND, ILLINOIS, adjacent to Chicago, was recently faced with the problem of securing an adequate supply of water at uniform pressures throughout its distribution system. The solution to this problem has been found through the use of modern elevated storage.

This municipality has a population of approximately 16,500. The minimum daily water consumption is 1,800,000 g.p.d., and at peak periods during summer months the maximum of 3,000,000 g. p. d. is reached. Blue Island's water supply is obtained from Lake Michigan, via the Chicago waterworks system—through two 8-in. connections. In the past, a break in either of these two mains would have materially reduced the supply of water, and if breaks occurred in both, residents of Blue Island would soon be without water.

Since the installation of the 1,000,000-gal. elevated tank shown above, however, all danger of such an occurrence has been eliminated. The tank, which is filled during offpeak periods, maintains uniform distribution pressures throughout Blue Island, even during peak-load periods. This has not only materially increased the efficiency of the entire water supply system, but provides an ample reserve for fire protection.

Please address our nearest office for information on Horton tanks to fit your needs.



BEFORE . . . AFTER

The two pressure charts illustrated above show a comparison of pressures before and after the elevated tank was installed at Blue Island. These charts were recorded in the meter shop and are representative of the entire distribution system. The temporary pressure fluctuations which appear in the right-hand chart, however, were caused by local testing operations, and do not apply to the system in general.

CHICAGO BRIDGE & IRON COMPANY

Chicago.....2127 Old Colony Bldg.
New York.....3308-165 Broadway Bldg.
Cleveland.....2236 Rockefeller Bldg.
Detroit.....1501 Lafayette Bldg.
Philadelphia..1616 "1700" Walnut St. Bldg.
Boston.....1501 Consolidated Gas Bldg.
Birmingham.....1502 N. Fiftieth Street
Dallas.....1406 Liberty Bank Bldg.
San Francisco.....1033 Rialto Bldg.
Houston.....2919 Main Street
Tulsa.....1625 Hunt Bldg.
Los Angeles.....1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water-Works Operation

One of the Fleet of Seven New Emergency Trucks Recently Commissioned by the Water Extension Division, Department of Public Works, Chicago, Ill.

Water Pipe Maintenance in Chicago, Ill.

THE Water Pipe Extension Division of the Department of Public Works of Chicago, Ill., is prepared to meet any emergency in the water-distribution system involving repairs to broken mains or damaged fire hydrants. Seven new model EGU Mack trucks have recently been placed in commission subject to call at any time and fully equipped for service. In operation the trucks carry from seven to ten men with all such necessary tools as air hammers, concrete breakers, hydrant repair parts, all small tools required for such work, and barricades for protecting the workmen.

Chemicals Regulated in Domestic Services

MANY large buildings in New York City have in the past few years been making arrangements with service agencies to treat the water in the buildings, to reduce corrosion of the piping systems. It was felt by the various departments of the city of New York that this work should be rigidly regulated, as there are definite possibilities of mistakes or accidents which might affect the quality or safety of the water supply in the buildings or even in the city mains outside.

Following a number of conferences with technical committees, representatives of the firms engaged in this business and representatives of the Merchants' Association, a set of regulations was drawn up and the City Board of Health enacted a new section—170—to the Health Code to control this problem.

The chief features of this new section are: Every company engaged in this business must obtain a permit from the Department of Health. Such permits are to be given only where fully qualified chemical engineers are in responsible charge of all operations in connection with water treatment in buildings. A report must be submitted to the Department of Health within 24 hours after an installation is made or any servicing is done at new locations. Eight chemical compounds have been specified which alone can be added to the water supply and with maximum limits. The regulations prohibit the addition of chemicals to the water supply in buildings by janitors, superintendents or any other persons than the responsible employees of licensed firms. The devices used for the application of the chemicals must also be approved by the Department of Health.

Old Water-Main Joints Melted for Re-use

THE recent completion of Lake Springfield and the complete new pumping plant at Springfield, Ill., has resulted in the abandoning of the pumping station on the Sangamon River which served the city from 1866 to 1936. In 1917 the increased population of the city necessitated laying an additional 24-inch main. This transmission line is no longer needed, but a second transmission line is being constructed connecting the new pumping station on the lake with the city distribution system.

With an eye to economy, the old cast-iron main was closely inspected, and it was found to be in such good condition that it might be moved from its old position and relaid, after cleaning, for the new transmission line. Inspection of the joints showed the lead in perfect condition, so that it was merely a matter of melting the lead out of the old line with oxy-acetylene and oil torches and re-using it for calking the new joints. The new line, using 15,536 feet of 24-inch cast iron pipe, has 1,390 lead joints, requiring in all 61,160 pounds of lead for calking. The city is making a saving of about $100,000 in laying the new water main, because its Water Department had the foresight to use cast iron pipe in 1917, and the joints are now being salvaged with the pipe for re-use, saving $1,850 in the jointing material alone.

Melting a Lead Joint from a 24-Inch Cast Iron Main Laid in Springfield, Ill., in 1917, to Permit Using the Pipe and Lead for New Line

If you were "writing your own ticket"

For the Ideal Water Softening Plant

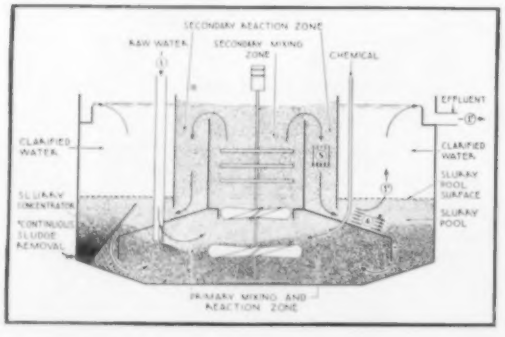
● You would want a plant that could be stopped whenever necessary and when started again would immediately reach full operating efficiency.

● You would want the plant flexible enough to handle flows from a very low rate to rates even in excess of normal capacity, all with the same uniformly satisfactory results.

● You would want operating expenses to be at the absolute minimum—which would mean full use of treating chemicals without unused lime passing to waste.

● You would want all treatment steps combined and centralized for economy in construction, maintenance and operation.

● You would want the plant to require as little space as consistent with best results.



● You would want sludge removal to be continuous and automatic.

● You would want the softening process to be simple, and fool-proof in operation to assure dependable performance.

● Naturally you would want the effluent constantly uniform and of low hardness and turbidity.

● You would want the plant to be of the most up-to-date and modern type available.

● But at the same time you would want the plant to have *known* ability—to have proved itself in scores of successful applications—*you would want it to reflect your good judgment in its selection.*

You've Specified the Accelator!

In "writing your own ticket" for the *ideal* softening plant, *you've specified the Accelator.* Feature by feature, it satisfies every requirement—The Accelator *is* the ideal softening plant. Bulletins 1820, 1821 and 1822 tell you why. Write for them — they are free.

INFILCO

INTERNATIONAL FILTER CO., 325 W. 25th Place, Chicago, Ill.

Sewage Sludge—Stream Pollution

The Crane and Scraper Unit for Spreading Sewage Sludge at the Disposal Area Near the West Side Works, Chicago Sanitary District

Scraper Aids in Disposal of Sludge

THE West Side sewage-treatment works of the Sanitary District of Chicago has the problem of disposing of some 75,000 cubic yards of Imhoff tank sludge each year. The sludge is hauled from the drying beds to a disposal area about 1½ miles from the plant. This site is a long strip of waste ground lying between the Des Plaines River and the Sanitary Canal, and is of little value for any other purpose than as a dumping place for waste. Trains of 30-cubic-yard dump-cars haul the sludge to the area and dump from a track built on the top of an old spoil pile which runs along the bank of the river.

The sludge is spread over the area by a 3-cubic-yard Sauerman Crescent scraper bucket operated by a locomotive crane that travels on the unloading track. At the opposite side of the area, 400 feet from the track, are six steel masts, 30 feet high, spaced 200 feet apart, which support a 200-foot elevated bridle cable. The scraper tail block is attached to a bridle frame riding on the elevated cable. This arrangement permits rapid shifting of the tail block along the 200-foot space between a pair of masts, and the complete bridle can be moved from one set of masts to another very quickly. With this simple equipment, sludge can be piled 30 feet high over an area 1,000 feet long and 400 feet wide, taking care of the disposal problem for many years to come. The area can be lengthened, of course, simply by setting up additional masts.

Work at the dump is confined to the summer months. This fact decided the Engineering Department of the Sanitary District in favor of a locomotive crane for a power unit instead of a scraper hoist mounted on a car. The crane can be used during other months of the year for various jobs around the plant, whereas a hoist could be used only for the one purpose. The crane, built by the American Hoist & Derrick Co., has drums specially designed to provide suitable rope speeds and rope capacities for operating the scraper bucket on the 400-foot haul. These changes in no way impair the usefulness of the crane for ordinary material-handling work.

Protozoa as Indicator of Stream Pollution

A VERY careful study of protozoan plankton in flowing streams has been made by the U. S. Public Health Service on the Illinois, Potomac, Ohio, San Joaquin and Raritan Rivers. Other studies have been made on English and European rivers. The most recent study reported by James B. Lackey, cytologist, in the November 18 issue of *Public Health Reports*, is aimed to show how protozoan plankton are indicators of pollution in a flowing stream. This study was devoted to the Scioto River in Ohio.

In a summary Mr. Lackey states that 244 plankton samples were taken from 16 sampling stations along the Scioto River and a few tributaries, including stations in the zone of greatest pollution as well as transition and clean-water zones. These were examined in part as fresh unpreserved samples, and in part as 4 or 5 per cent formalin samples. The plankton was concentrated by centrifuging and examined drop by drop, so that the species could be identified and counted either at a magnification of 125 diameters or 537 diameters. A total of 182 species of protozoa were identified and their relative abundance at the various stations noted. In the paper referred to, it is shown that one group of ciliates definitely favors pollution and another group is adversely affected by it. The Volvocales, an order of green flagellates, cannot be considered as a group, for those of the genus Chlamydomonas show large average numbers below the zone of pollution, while four colonial genera, Eudorina, Pandorina, Spondylomorum and Gonium, show a rise in the foul-water zone and a decline in the clean-water zone.

Euglena shows a distinctly favorable reaction to polluted water, considering all species of this genus found in the Scioto. Trachelomonas behaves likewise, but the different species react somewhat differently to pollution and it is probable that each species should be considered seprately. The genus Phacus shows a fairly uniform distribution throughout the river, and as a genus is not a good indicator.

One genus of Cryptomonadida, Cryptomonas, probably represented by two species, is shown to be present throughout the year and to react very sharply to pollution by declining in numbers. Not heretofore used by investigators, probably because unrecognizable in preserved samples, it promises to be a very valuable indicator.

Another organism not herefore considered is a small flagellate, Chrysococcus of the Chrysomonadida, easily recognizable in preserved samples and reacting as sharply and negatively to pollution as Cryptomonas. It is also believed to be a valuable indicator, but both Cryptomonadida and Chrysomonadida should be studied in other streams.

It is shown that some organisms which appear in the polluted zone in large numbers may be clean-water forms added by tributaries and diminishing in the presence of pollution, and that the importance of tributaries in this respect must be carefully recorded.

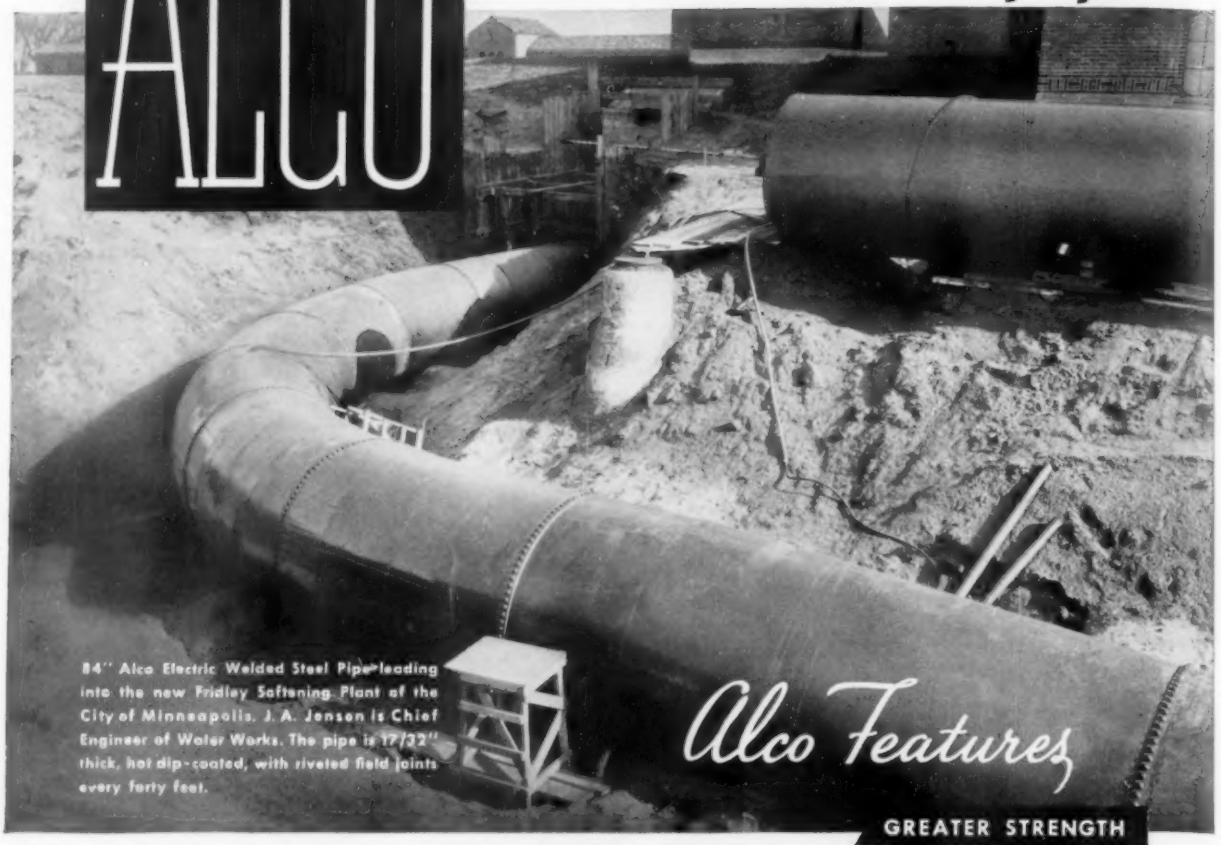
Recognition of organisms as to species is important and must be carried out whenever feasible. Examinations of fresh samples greatly facilitate identification of preserved forms. It is not safe to draw conclusions as to the ecologic status of a form because it is found in either clean or polluted waters. River plankton is a mixed one, and both clean streams and polluted ones should be studied. Conclusions may then be based on the relative numbers present in the two situations.

It appears probable that there are certain species of plankton protozoa which, because of clear-cut reactions to the presence of sewage, may serve as indices of pollution in much the same way as a five-day biochemical oxygen demand or a coli-aerogenes count. Quantitative determinations for such species would give a standard biological determination to supplement the chemical and bacteriological standard determinations. The first year's detailed examination of the Scioto River protozoan plankton gives an indication of some such species, but must be accepted cautiously because of the short time the studies have been in progress, the lack of comparison with other rivers, and the fact that some species within groups heretofore generally accepted as favorable to pollution, e.g., the Euglenida, apparently do not favor pollution.

SEWER RENTALS

A complete summary of Enabling Acts in all the states, and reports on rates, appear in the 1939 MUNICIPAL INDEX.

ALCO ELECTRIC WELDED *Steel pipe*



84" Alco Electric Welded Steel Pipe leading into the new Fridley Softening Plant of the City of Minneapolis. J. A. Jenson is Chief Engineer of Water Works. The pipe is 17/32" thick, hot dip-coated, with riveted field joints every forty feet.

Alco Features

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Health Department Activities

The Pandemic of 1918

THE following editorial quoted from the November 19, 1938, edition of the New York *Sun* discusses the world-wide effect of the influenza epidemic of 1918. It is to be hoped that it will never be repeated, but should there be a recurrence, there is little doubt that the effective health services of our nation, composed of Federal, state and municipal bureaus, boards and departments, would effectively cope with this dread disease. Science has given us more effective weapons to fight disease in these past twenty years, and we must be prepared to use them in the interest of the nation's health.

"Twenty years have passed since the terrible pandemic of influenza afflicted mankind. The disease appeared in Spain in May; the date and point of its original appearance in the United States have never been determined, but the malady was reported in Boston in August. This country was fortunate in that but one of three waves that were reported was observed here, yet the deaths from it in the United States were placed at 350,000 among civilians and 17,000 in the Army.

"Accepting the period from May, 1918, to March, 1919, as that of the pandemic, the number of its victims has been set at 25,000,000. This total is fixed by adding to the deaths in countries having standardized mortality records figures computed from estimates of 5,000,000 to 6,000,000 deaths in British and native India and extension of the rate thus established to China and other portions of the Far East for which official figures are not attainable. No land escaped this visitation; Iceland suffered with Samoa, South Africa with New Zealand. No refuge was so well guarded, no hiding place so obscure as to provide protection against its ravages. It took its toll without discrimination from all the races of man."

Food-Handler Examinations Relaxed by Cities

TWO northern cities have relaxed their health examinations of food handlers and have substituted stricter sanitary requirements. While there is doubt in some minds that this is a progressive step, still it has worked well in Hartford, Conn., and in New York City.

Since Hartford changed its health regulations covering public eating and drinking places, in 1936, the number of properly disinfected glasses and dishes increased from 33.4 to a total of 85 per cent. Hartford, like several other cities, abandoned the customary municipal requirement of periodic medical examination of food handlers, and substituted stringent sanitary regulations for employees and equipment in places dispensing food and drink to the public. The city's Health Department gives instructions on proper disinfection of utensils and the observance of personal hygiene. In addition, the Health Department requires food and drink dispensaries to display record cards scored monthly by health officers, showing their rating on sanitary and other health factors.

New York City also substituted a regulatory program for routine medical examination of food handlers in 1937. The New York City Health Department found that it cost the city too much to give complete physical examinations to certify that food handlers were free from communicable disease. Furthermore, there was no insurance that the food handler would remain free of disease during the tenure of his health certificate.

Educational Work Reduces Diphtheria

THAT the educational work of a department of health can do much to reduce the mortality of diphtheria is shown by the results obtained in New York City. A definite educational program to promote the immunization of children against diphtheria has been under way in New York City since January, 1929. The following table shows the marked reduction in mortality resulting from this program:

CITY OF NEW YORK, DIPHTHERIA, CASES AND DEATHS 1910-1938 INCLUSIVE

Year	Cases	Deaths	Deaths per 100,000 Children Under 15
1910-19 (average)	14,282	1,290	83.0
1920-29 (average)	10,685	684	42.0
1930	3,794	198	11.7
1931	3,999	186	11.0
1932	3,581	210	12.5
1933	1,891	86	5.2
1934	1,593	103	6.2
1935	1,189	68	4.1
1936	1,124	35	2.1
1937	1,184	58	3.6
1938	712	27	1.7

Precautions Against Yellow Fever Cases

OWING to the shortening of the flight time of airplanes coming to Miami from actual or potential foci of yellow fever in South America, to ten hours, thereby increasing the danger of bringing passengers whose arrival, as timed from the date of possible exposure, falls within the incubation period of the disease, a special order has been issued by the Director of Health of Miami, Fla., regarding such passengers. The special order, issued by George N. MacDonell, M.D., Director of Public Health, states:

"Any person coming to or remaining in Miami, who, within six days previous to his or her arrival in Miami, has been in any city, town, or area which the United States Public Health Service has declared to be an actual or potential focus from which yellow fever might be spread, must, within 24 hours after arriving in the city, report in person to the Department of Public Health, eighth floor of the Court-House, or telephone 3-4431, between the hours of 8:30 A.M. and 5 P.M. Said person shall be kept under surveillance until six days have elapsed from the time of departure from the focus above referred to. Should any febrile condition arise, the Director of Public Health must be notified immediately.

"Should said person leave Miami before the expiration of that time, he must report to the Director of Public Health such intention and furnish him information as to his movements during the period of surveillance.

"This order shall not apply to transients leaving the city immediately upon arrival nor shall it apply to any person who can show a certificate of immunity to yellow fever."

Full-Time Health Service

THE city of Norwalk, Conn., by vote of the City Council on August 25, 1938, placed the Health Officer on a full-time basis, effective the following month. By this forward step Norwalk becomes the ninth city in Connecticut to have a whole time Department of Health. Robert E. Perdue, M.D., because of his many years of successful experience, was named the first full-time Health Officer of Norwalk for a period of four years. A public health nurse and a clerk have also been added to the staff.

Care of Water and Milk Reduces Typhoid Cases

THE recent death of the well-known typhoid carrier, Mary Mallon, in New York City, recalls the time thirty years ago when typhoid fever was one of that city's major public health problems. In those days, with the city's population about 4 million, cases of typhoid fever averaged about 4,000 per year, and the deaths ranged from 600 to 700. During 1938, in a population of nearly 7.5 million, there were only 269 cases and 23 deaths, an achievement due directly to the administrative measures taken for the control of this disease.

Thanks to the sanitary supervision and chlorination of the municipal water supply, and the pasteurization of all milk sold in the city, New York has had no water-borne or milk-borne outbreaks of typhoid fever during the past quarter-century. The Health Department's supervision and control of typhoid carriers is effective, as is also that governing the sale of shellfish. Altogether, the visitor to New York City may arrive feeling confident that he runs no risk of contracting typhoid fever. The city's typhoid experience since 1910 is shown in the following table. The 1938 mortality rate is the lowest ever recorded in New York City.

CITY OF NEW YORK TYPHOID FEVER, CASES AND DEATHS, 1910-1938 INCLUSIVE

Year	Cases	Deaths	Death Rate per 100,000	Year	Cases	Deaths	Death Rate per 100,000
1910-19 (average	2,262	339	6.8	1933	557	70	1.0
1920-29 (average)	958	126	2.0	1934	332	44	0.6
1930	497	62	0.9	1935	314	34	0.5
1931	603	77	1.1	1936	305	33	0.4
1932	560	64	0.9	1937	268	26	0.3
				1938	269	23	0.3

Sacramento Invests In Public Safety

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Fairchild Aerial Surveys, Inc.

The Gamewell Three-Fold Fire Alarm System A Profitable Investment in Public Safety

The City of Sacramento, California, has received definite evidence that the Three-Fold Fire Alarm System is a sound investment and that the expenditure of municipal funds for its acquirement represented true economy.

City Manager J. S. Dean writes as follows:

> "You might be interested to know that the Board of Fire Underwriters have just changed the grade of our city from Class 4 to Class 3, and have reduced fire insurance rates on residences and masonry buildings to an amount approximating a total of $40,000.00 a year for the city as a whole. A large part of this, of course, is due to the new fire alarm system."

WRITE FOR CIRCULAR

In addition to this result, gratifying as it must be to the taxpayers, there remains the far greater value of protection which will be continuously afforded for many years to the uninsurable values which include continuity of established business, good will, credit, and steady employment, that make for a thriving community.

Make the Three-Fold Fire Alarm System your city's "first line of defense against Fire!"

THE GAMEWELL COMPANY, NEWTON UPPER FALLS, MASS.

Public Safety

Emergency Trucks Patrol Twelve Cleveland Zones

ONE of the most recent innovations in safety work pioneered by the Cleveland Police Department is the Emergency Mobile Patrol serving also as ambulance. Basically, they are standard International Model panel body trucks, equipped with steel floor and special rear step, body lining, and heavy screen partition behind the driving compartment, extra front seat, and barred rear-door windows. Each of the twelve units has an RCA radio receiving set, heater, siren, spotlight and police identification lights. Folding side seats provide for carrying prisoners or eight officers. Ambulance equipment includes cot, first-aid kit, H-H inhalator of Mine Safety Appliances Co., and stretcher.

One truck is assigned to each of the twelve zones into which the city has been divided for this work. Manned by two police officers skilled in safety principles, the patrol cruises its district 24 hours a day, and can reach the scene of an accident within 10 minutes.

Photograph by courtesy of International Harvester Co.

Patrol-Wagon and Ambulance Features of Cleveland's New Police Trucks

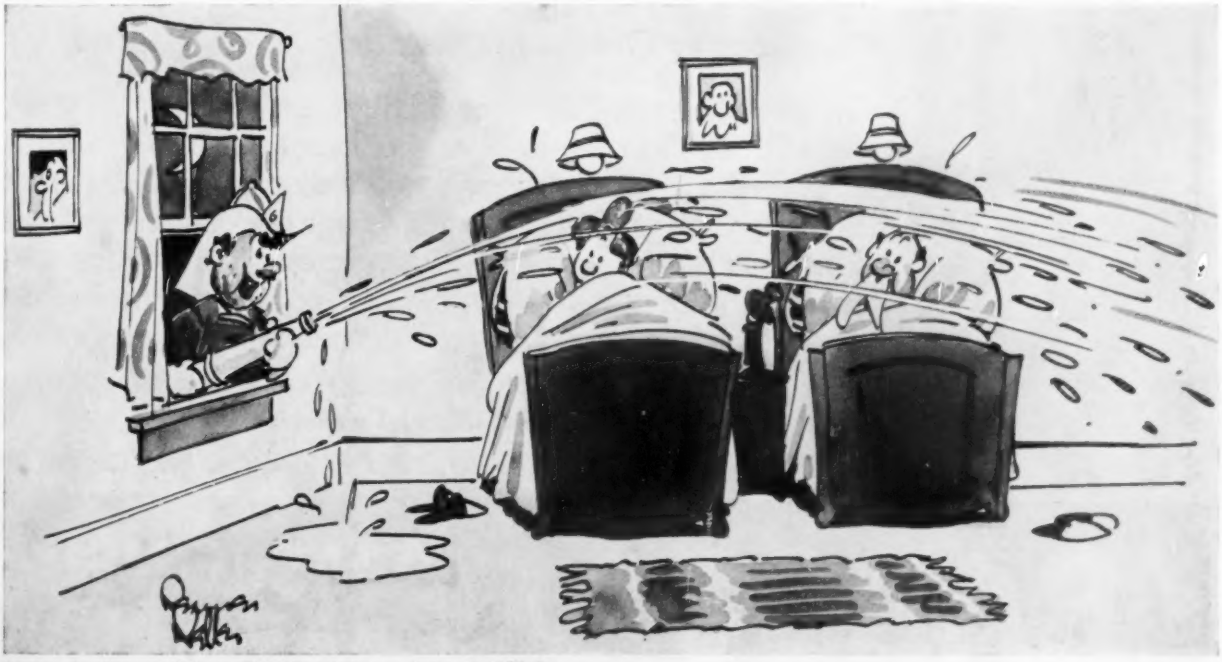
Milwaukee's Police Record

IN the six years that the inter-city contest has been conducted by the National Safety Council, Milwaukee four times won first place in its class, and one year received the Grand Award as the safest city in the country. Among the largest 25 cities, only 7 reported fewer automobile fatalities in 1937 than in 1938; Milwaukee had 120 in 1928 and 64 in 1937. Compulsory reporting of automobile accidents resulting in $50 damage, in effect since 1936, has greatly increased the number now reported. The lowest residence burglary rate in cities over 300,000 population is $15.13 per $1,000, and only Boston, Buffalo, Milwaukee, Minneapolis and Rochester have this rate.

Of 16 cities with population 300,000 more than Milwaukee or 300,000 less than Milwaukee, the Wisconsin city is twelfth in the number of its police cars and third in the number of its motorcycles. In 1930, Milwaukee had 106 intersections equipped with traffic signals, now 148; it had 2,859 fire and police boxes, now 3,511.

Traffic Signals Prove Worth in Altoona

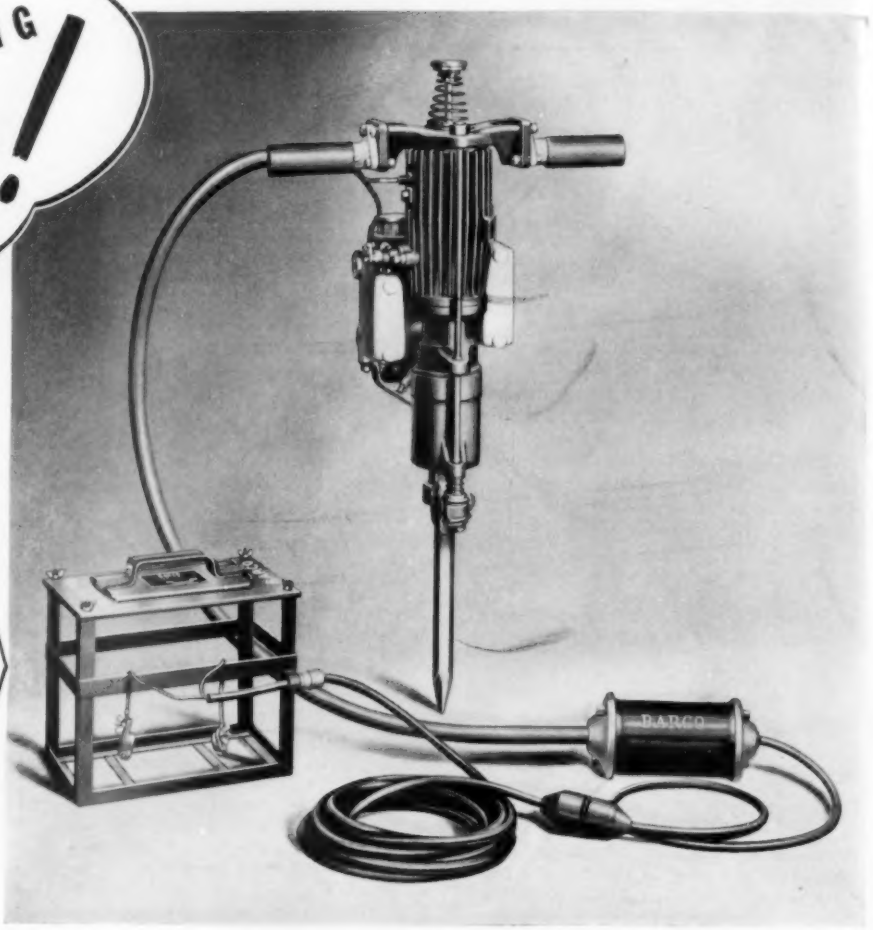
THERE were 74 accidents at 25 intersections in Altoona, Pa., during the 12 months to November 13, 1938, at which date Crouse-Hinds traffic signals were installed; and during the 12 months since then there have been 41 accidents at these intersections. With the installation of this traffic-control system on 11th and 12th Avenues from 11th to 18th Streets, in the business district, Police Department surveys prove (1) better regulation and flow of traffic, (2) fewer policemen needed on traffic duty and consequent closer protection elsewhere, in addition to the 45 per cent reduction in accidents. Two more intersections will be equipped.



Cartoon by Reamer Keller. Reproduced by permission of Collier's

"Don't worry, folks—It's just a precaution to keep the fire next door from spreading"

SOMETHING *New!*



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Vol. LIV, No. 6 The American City JUNE, 1939

Water-Main Cleaning Methods Used in Outfall Sewer

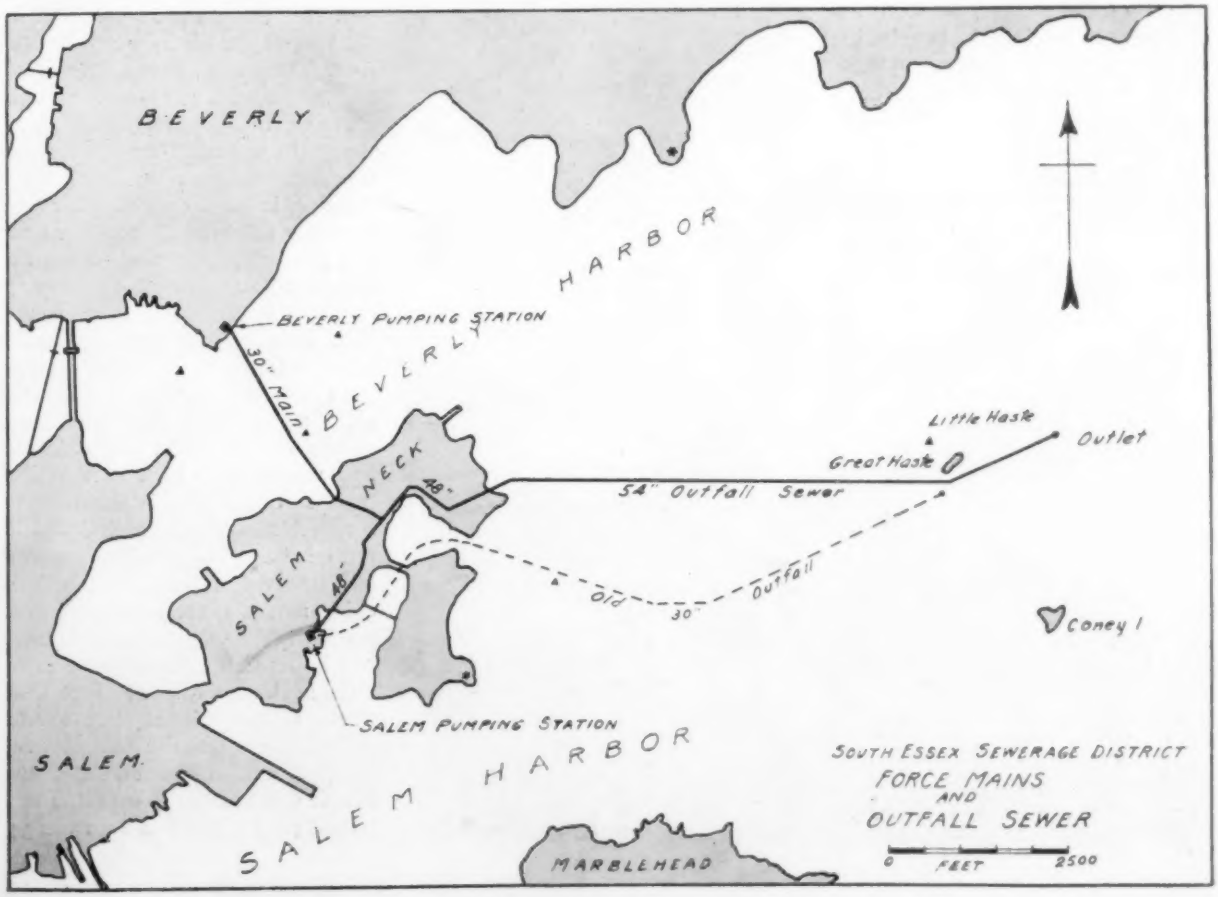
Submarine Lines of Cast Iron Pipe Cleaned by the South Essex Sewerage District, Salem, Mass.

By C. L. Nyman
District Engineer

The South Essex Sewerage District is a small sanitary district organized under chapter 339 of the acts of 1925 of the General Court of the Commonwealth of Massachusetts, and derives its name from its location in the southern part of Essex County, Massachusetts, where the District includes the cities of Beverly, Peabody, and Salem, and the town of Danvers, together with certain state and county institutions located in Danvers and Middleton.

The purpose of the District was to construct and operate a system of trunk sewers, pumping stations, and outfall sewer, to collect and convey the sewage of the municipalities included in the District to a common point of disposal in Salem Harbor.

Included in this program of the District were the construction of a 30-inch cast iron pipe force main from the Beverly pumping station to a point near Juniper Cove at

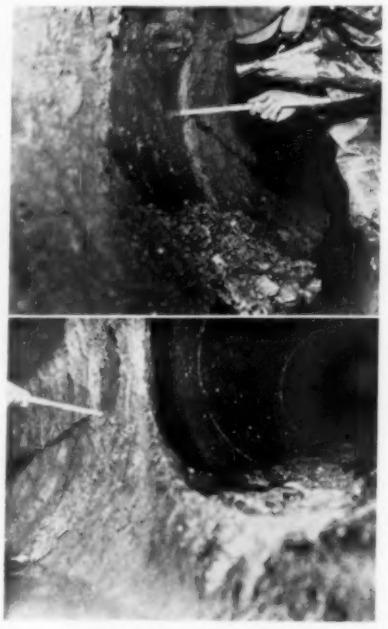


Salem Neck; the construction of a 48-inch cast iron pipe force main from the Salem pumping station across Salem Neck, connecting with the 30-inch force main, and continuing to Juniper Point at the easterly end of Salem Neck; and the construction of a 54-inch cast iron pipe outfall sewer from Juniper Point, under Salem Harbor, to a point of outlet about 8,300 feet from Juniper Point.

It was these last two pipe lines, namely, the 48-inch main from the Salem pumping station to Juniper Point, and the 54-inch outfall sewer from Juniper Point to point of outlet, that it was found necessary to clean, since they were becoming heavily coated on the inside with a hard scale formation, to the extent that their carrying capacity was greatly reduced, both on account of their decrease in diameter and the roughness of the coating, which was causing extremely high friction losses.

Scale Formation

The origin of this scale, which had been increasing in the pipe lines for about ten years, lay in the nature of the sewage, which from Peabody and Salem is largely industrial waste from the many tanneries and allied industries which form the principal industry of these cities. The waste contains a very large amount of caustic lime ($CaOH_2$) in solution, which is precipitated on the inside of the sewers and outfall as lime carbonate ($CaCO_3$). The amount of the scale in the 48-inch force main was about 1¼ inches, while in the 54-inch outfall it was about 2½ inches thick.



CONDITION OF PIPES BEFORE CLEANING

Above—The 48-inch force main with 1¼ inches of lime scale. Below—Looking upstream at junction of 48-inch force main and 30-inch force main, showing lime scale

Cleaning the 48-Inch Line

When it was decided to attempt the cleaning of these lines, the major problem was presented by the 54-inch outfall, which is 8,300 feet long and in which there was no access to the inside of the pipe. The 48-inch line, which is all on land and has several access wells, could be easily entered in case of a stoppage, while the 54-inch line could not. It was therefore decided to attempt the 48-inch line first and, if this were successful, then to clean the 54-inch outfall. After studying many schemes for the cleaning of these lines, the type of machine and procedure of the National Water Main Cleaning Co., of New York, was selected as the most feasible. A contract was entered into with the company to undertake the 48-inch line, and in April, 1938, this work was carried out.

The machine used by the company consisted of 8 "heads," so-called, similar in shape to a dish-pan, with a ring of spring steel scrapers bolted around the edge of each of the heads, which were joined together in two sections of four each, with a flexible joint between, to allow the machine to negotiate any bends in the line. The spaces between the scraping blades permitted the passage of some of the water for the purpose of washing the dislodged material ahead. This machine was assembled in the pipe line through an access well in the rear of the Salem pumping station. The pumps were then started and the machine was forced through the pipe line to the beginning of the 54-inch outfall sewer. As the machine began to move through the line, it was found that it could be easily followed by walking over the ground along the pipe line, since it made a fairly loud scraping sound as it progressed through the line. As the end of this line could be seen from the pumping station by means of a surveying instrument, a flag was used to signal back to the station when the machine had reached the end, so that the pumps could be immediately stopped and the machine would not be allowed to pass into the outfall under the harbor. The machine moved quite rapidly at first, gradually slowing down, until after two hours and eight minutes it arrived at the end of the 48-inch line; when, upon a signal back to the pumping station, the pumps were stopped, and upon entering the line it was found the machine had passed only a few feet into the 54-

PREPARATION FOR CLEANING

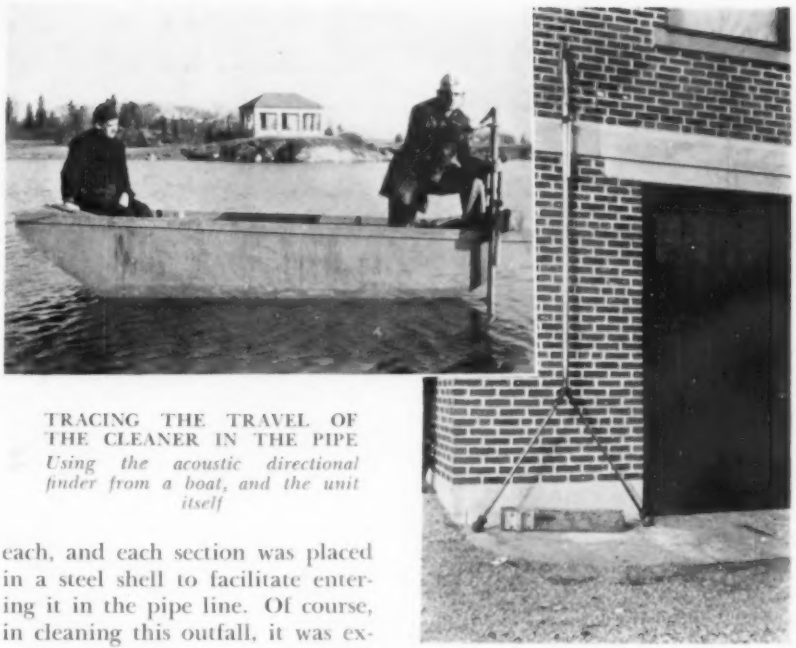
Left—Two sections of 54-inch cleaning machine being lowered into the pipe line. Below—Rear end of the machine in the line before being pumped through the line

inch outfall. An inspection of this line after cleaning showed that all the scale had been removed and the pipe appeared about as clean as new pipe. After the 48-inch machine had been removed after passing through the 3,400 feet of the 48-inch force main, friction loss measurements through this line were then taken and were found to correspond exactly with the theoretical friction loss for new clean pipe.

Cleaning the 54-Inch Outfall

With the successful cleaning of the 48-inch line completed, it was decided to undertake the cleaning of the 54-inch outfall immediately, with the same type of machine. With the hope of lessening the mechanical difficulties in entering the machine in the pipe, a little different type of machine was made by the company; however, after assembling this in the line, it did not appear as suitable as the original type, since the blades were much longer and more flexible, and it was feared they might not remove the scale, or that it might become lodged in the line. This machine was therefore removed from the line.

At this time, as it was approaching the bathing season, and a stoppage in the outfall sewer would necessitate discharging sewage along the shores for several weeks, it was decided to postpone the cleaning of the outfall until the fall; and in October, a 54-inch cleaning machine, similar to that used in the 48-inch line, was manufactured by the contractor, and the cleaning of the 54-inch line was undertaken. This machine was assembled in the shop in two sections of three heads each, and each section was placed in a steel shell to facilitate entering it in the pipe line. Of course, in cleaning this outfall, it was extremely important to follow the progress of the machine, if possible, so that in case of any stoppage of the machine its location would be known. For this, a hydrophone was purchased from the Submarine Signal Corporation, of Boston, to be used in listening for the position of the machine during its passage through the line. This company also lent the District two directional listening devices, which it was thought might be of some assistance in tracing the progress of the machine. The machine was then assembled in the pipe line and the pumps were started. As soon as the machine had started to move through the pipe, the hydrophone was lowered to the bottom of the harbor, a short distance out on the pipe line, and it was found that the sound of the machine could be easily detected. The other listening devices were also used, located farther along the pipe line and at some distance from the line, and these also picked up the sound of the machine very clearly, and its position or direction from the listening stations could be easily traced. Throughout the entire passage of the machine through the line, the six heads of the machine registered six distinct clicks at each pipe joint in the line. From these signals the progress of the machine could be timed, as well as followed, from the listening stations. It was found that the machine was traveling at the rate of a 12-foot pipe length in about 10 seconds at the beginning, and that it slowed down to about 12 feet in 20 seconds near the end of the line, passing the entire 8,300 feet of the pipe line in the remarkably fast time of 2 hours and 38 minutes.



TRACING THE TRAVEL OF THE CLEANER IN THE PIPE

Using the acoustic directional finder from a boat, and the unit itself

(Continued on page 109)

AFTER THE JOB WAS FINISHED

Left—Bringing in the 54-inch cleaning machine after its exit at the the outfall end of the sewer, and, right, a close-up of the cleaner

Sacramento Filtration Plant Built in Duplicate

Improved Units and Equipment Used in New Section of Water Works of Capital City of California

By THEODORE REED KENDALL
Engineering Editor, THE AMERICAN CITY

CITIES from large to small aim to build practically all portions of a water purification and pumping plant in duplicate so as to insure continuity of operation. This protection is exemplified remarkably at the pumping and treatment plants of Sacramento, Calif. While the two parts are not exact duplicates, they may be operated as separate plants if desired, and the newer part is built with due attention to improvements over the old as a result of experience in operation.

Intake

The intake for the water pumping station is about ¼-mile below the confluence of the Sacramento and American Rivers and consists of a torpedo-shaped tower 20 x 35 feet in section with five gates. Water is taken into the tower at about 10 feet below normal summer river level. From the intake tower two 60-inch pipes are carried through the levee, where they divide with two Y branches that are blanked off, the pipe continuing as 42-inch lines and the branches being 54-inch. The lines continue as siphons for about 1,000 feet, when there is another set of Y's duplicating the first, and the pipes enter the pumping station as 60-inch lines. The reason for this is that to breach the levee at a time when more water might be needed would be an expensive matter, and the same applies to the entrance to the pumping station. The siphons are primed automatically when the river is low.

Pumping Station

Both low- and high-lift pumps are installed in one circular pumping station which has all building openings at elevation 40 as a protection against flood. The station is 75 feet in diameter with an inner ring 44 feet in diameter for the low-lift units. A 10-ton Cyclops wall crane permits the easy handling of any pump units for repair or replacement. The station can be divided into two complete units on an east-and-west line both electrically and hydraulically and be operated entirely independently.

Power for the operation of the plant comes from two systems through 11,000-volt transformers and two banks reducing the voltage to 2,200 for station use. The total installation of transformers now amounts to 3,000 kva, with provision for doubling the capacity if required.

The high-service pumps are arranged around the outer wall of the station, and the low-lift pumps near the center, while the two wash-water pumps and sump pumps are grouped around the entrance stairs. Opposite the stairway is the switchboard, with provision for remote control of all pumps and valves from it. The low-lift bank includes one 25-mgd pump with 250-hp GE motor, two 15-mgd with 175-hp motors, two 20-mgd with 225-hp motors, and one 10-mgd with a 125-hp motor. All the motors are Westinghouse unless otherwise specified. In the high-lift group are three 20-mgd pumps with 900-hp Westinghouse motors, one 10-mgd with a 350-hp GE motor, and a 17- and a 15-mgd each with 700-hp Westinghouse motors. The pumping equipment also includes two 4,000-gpm wash-water pumps with 100-hp motors and two 4,000-gpm sump pumps with 50-hp motors, all Westinghouse. The station provides space for a total of eight 25-mgd high-lift and eight 25-mgd low-lift in case some of the existing pumps were replaced. The high-lift pumps and the wash-water pumps are all horizontal units, while the low-lift and sump pumps are vertical shaft units.

The station is equipped with three Builders Iron Foundry ven-

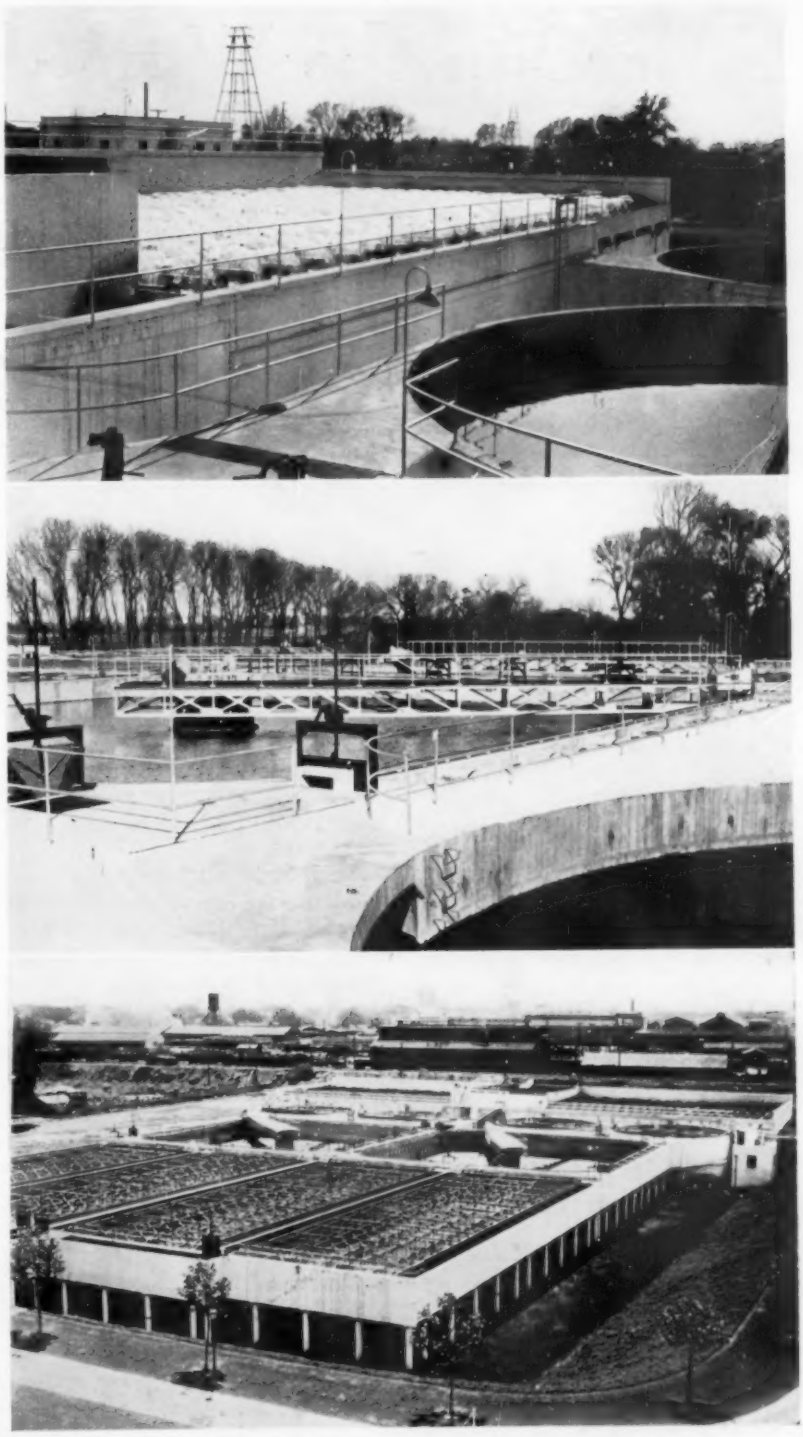
THE OLDER SECTION OF THE SACRAMENTO WATER WORKS
This shows the aerators and grit basin

turi meters, two 15 x 30 and one 21 x 42, all on the high-pressure service, to measure the water leaving the plant. In addition, there are two Builders Iron Foundry Telemeters on the 3-mg concrete storage tanks 3.7 miles from the pumping station, to indicate accurately the elevation in the tanks. In order that there may be no overpumping at the low-lift pumps, there is a complete system of Pneumercator gages at the switchboard, indicating the elevation of the water in all the basins at the plant. On the ground floor of the station are a machine shop and a small storeroom for fittings.

Aeration and Clarification

The low-lift pumps deliver the water to either of the two sections of the plant, which operate slightly differently so will be described separately, the older section first. The water enters a grit basin first to permit the settling-out of the larger particles. This basin is 193 x 40 x 25 feet deep. At the entrance end there are aeration nozzles as a part of the pre-treatment. These 210 nozzles are used in summer only, to improve the taste and odor of the water. In summer all the water is given this aeration and in the last four years the function of the nozzles has been assisted by the use of activated carbon, which is very reliable for the removal of tastes and odors from the water. The flow to the old pre-treatment plant is 35 mgd, and the grit basin and the aerators can be by-passed if desired by sending the water through a 42-inch steel pipe around the raw-water storage.

From the grit basin the water flows to a 7-foot-deep basin which is the top of a double-deck basin of 1-mg capacity measuring 193 x 300 x 7 feet deep. From this the water flows to the mixing tanks through a 5 x 6-foot sluice-gate. Alum, manufactured at the plant, is applied just as the water enters the first of the four mixing tanks. These are 40 feet in diameter and 22 feet deep. Water is admitted at the bottom of the first tank on two radii to give it a rotary motion, aided by a series of paddles actuated by a hydraulic ram driven by city pressure and with the water wasted



THE NEWER PRE-TREATMENT SECTION OF THE SACRAMENTO WATER WORKS

Top—One of the aerator fields. Middle—The Dorr clarifiers. Bottom—A general view of the newer unit, showing the four sedimentation tanks in the foreground

from the ram into the tank. The treated water leaves the first tank at the top and goes to the top of the second, leaving at the bottom through to the fourth tank, and thence to the sedimentation basin. The alum dose varies from 1.2 to 1.8 grains per gallon, with a maximum of 3.4.

The sedimentation basin consists of three sections, one of 1 mg, the

(Continued on page 119)

How Can the Work Relief Program Be Improved?

A Critical Analysis of 7,737 Surveys of WPA Projects and Methods

AMONG the most important problems confronting the American people and our local, state and national legislative bodies are those affecting the extent to which Federal funds ought to be provided and how most wisely allocated, controlled, and expended.

A significant aid to the clarifying of public opinion on these subjects is the "U. S. Community Improvement Appraisal," presented to President Roosevelt on May 8 by the National Appraisal Committee, representing the following:

American Engineering Council
American Institute of Architects
American Municipal Association
American Public Welfare Association
American Society of Planning Officials
National Aeronautic Association
Department of Adult Education (National Education Association)
National Recreation Association
U. S. Bureau of Public Roads
U. S. Conference of Mayors
Works Progress Administration

The method followed was to have some state organization such as a state league of municipalities, state planning board, state relief administration, or state university seek to gather from these state or local officials answers to a series of questions concerning the works program for the needy unemployed. Afterwards a state-wide committee of leading citizens summarized the answers, and made recommendations. The appraisal covered 42 of the 48 states, 1,977 of our 3,071 counties in the nation, and 3,723 municipalities.

Findings Summarized

The questions asked and the replies as affecting both physical and human accomplishments are summarized as to percentages in the accompanying graphs reproduced from the Appraisal.

As will be seen, there was only one point on which a majority of the reports gave a negative answer. On this subject 51 per cent of the comments indicated that the program had not covered adequately the field of the needy unemployables. This failure was ascribed to a number of causes, such as inadequate planning, inability of the communities to provide projects suitable for the relief workers available, and especially lack of sufficient funds.

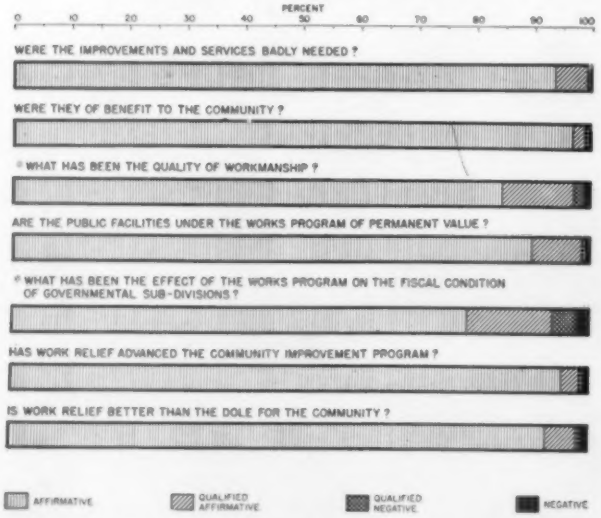
The answers set forth defects in the program:

1. Lack of a recognition of unemployment as a long-time problem frequently has resulted in a failure of comprehensive planning so essential to an effective program.

2. Federal, state and local funds have been insufficient to give employment to all needy employables.

3. The program did not permit or encourage, in many instances, the exercise of sufficient discretion, responsibility and

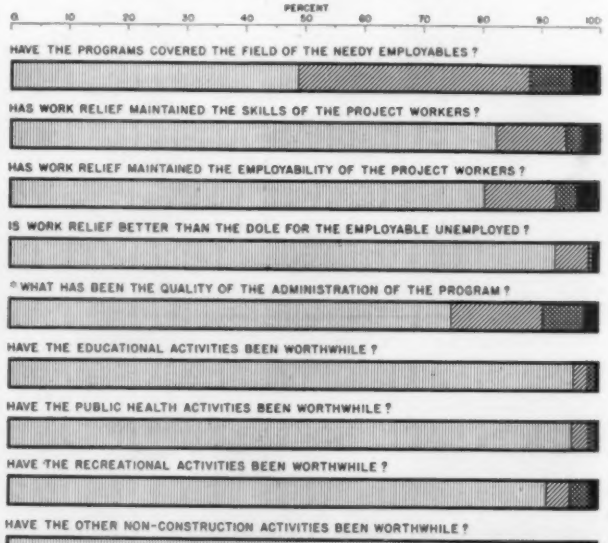
PHYSICAL ACCOMPLISHMENT


PERCENT
0 10 20 30 40 50 60 70 80 90 100
WERE THE IMPROVEMENTS AND SERVICES BADLY NEEDED ?
WERE THEY OF BENEFIT TO THE COMMUNITY ?
* WHAT HAS BEEN THE QUALITY OF WORKMANSHIP ?
ARE THE PUBLIC FACILITIES UNDER THE WORKS PROGRAM OF PERMANENT VALUE ?
* WHAT HAS BEEN THE EFFECT OF THE WORKS PROGRAM ON THE FISCAL CONDITION OF GOVERNMENTAL SUB-DIVISIONS ?
HAS WORK RELIEF ADVANCED THE COMMUNITY IMPROVEMENT PROGRAM ?
IS WORK RELIEF BETTER THAN THE DOLE FOR THE COMMUNITY ?
AFFIRMATIVE
QUALIFIED AFFIRMATIVE
QUALIFIED NEGATIVE
NEGATIVE

Physical accomplishments in the WPA work program include public buildings, highways, roads, streets and related facilities, airports and airway equipment, recreational facilities, water supply, sanitation and drainage systems, flood and erosion control, electric and communication utilities, grounds improvement, conservation activities and other tangible items grouped in the construction activities as weighed in the nation-wide survey made in the United States Community Improvement Appraisal.

* In the case of this question, "affirmative" is to be regarded as meaning "good"; "qualified affirmative," "fairly good"; "qualified negative," "rather poor," and "negative," "poor."

HUMAN ACCOMPLISHMENT


PERCENT
0 10 20 30 40 50 60 70 80 90 100
HAVE THE PROGRAMS COVERED THE FIELD OF THE NEEDY EMPLOYABLES ?
HAS WORK RELIEF MAINTAINED THE SKILLS OF THE PROJECT WORKERS ?
HAS WORK RELIEF MAINTAINED THE EMPLOYABILITY OF THE PROJECT WORKERS ?
IS WORK RELIEF BETTER THAN THE DOLE FOR THE EMPLOYABLE UNEMPLOYED ?
* WHAT HAS BEEN THE QUALITY OF THE ADMINISTRATION OF THE PROGRAM ?
HAVE THE EDUCATIONAL ACTIVITIES BEEN WORTHWHILE ?
HAVE THE PUBLIC HEALTH ACTIVITIES BEEN WORTHWHILE ?
HAVE THE RECREATIONAL ACTIVITIES BEEN WORTHWHILE ?
HAVE THE OTHER NON-CONSTRUCTION ACTIVITIES BEEN WORTHWHILE ?

Human accomplishments include the more intangible values developed or utilized by the non-construction activities of the WPA work program particularly in the field of education, public health and recreation and including sewing activities, school lunches, medical, dental and nursing care, art, library, historical projects and the like. Among these considerations was the question of how well human needs were met and the quality of the administration as weighed in the nation-wide survey made in the United States Community Improvement Appraisal.

initiative on the part of local officials.

4. There has not been enough flexibility to adjust wages and hours to meet variations in local conditions and the competency of the workers.

5. There has been ineffective local supervision of the relief workers in many instances.

6. There was a lack of skilled workers on relief in many localities, not only to carry on certain projects which were regarded as desirable, but also to provide more useful work for the unskilled.

7. There was a need of more vocational training, both to assist in securing skilled workers for selected projects and to facilitate the return of relief workers into certain private occupations.

Recommendation by the National Appraisal Committee

In its report the Committee makes the following specific recommendation:

"The Committee is in full accord with what it believes to be a maturing public conviction that the needy unemployed who are able to work should be furnished the opportunity for employment. An adequate long-time national program dealing with unemployment does not now exist and should be developed at the earliest possible time. To obtain this program, the National Resources Committee, collaborating with public and voluntary agencies at all levels of government, should be requested to make a report to the President of the United States to include:

"(a) A nation-wide objective survey to appraise the results achieved by all the agencies dealing with the unemployed.

"(b) A recommendation as to the best method of correlating measures for the relief of unemployment with comprehensive programs of public works, public services, private employment and provisions for social security."

Aid to Small Municipalities

Of the 7,737 surveys analyzed, the 3,723 which came from municipal officials included 154 from cities of over 100,000 population; 266 from cities of 25,000 to 100,000; 1,201 from municipalities of 2,500 to 25,000; and 2,102 from places under 2,500 population.

The result was a more careful analysis than is generally made of the problems and needs of small municipalities. Discussing objections reported from the little towns and villages, the National Appraisal Committee says:

"Small communities appear very widely to lack the services of people technically expert enough to fill out applications for WPA projects in proper form, particularly with regard to estimates. The applications are returned to them by the district WPA office for revision, and sometimes have to be done over 'as many as ten times.' Meanwhile, the community is supporting a group of able-bodied unemployed on direct relief for weeks or months, and no work is done on the proposed project.

"The expansion of WPA employment to correspond with the diminution of private employment often means more WPA jobs in winter; in all northern states with severe winters, road work and similar outdoor work is impracticable during severe winter weather; but in many small communities, road projects and drainage projects may be the only WPA projects there are. At best, the work is interrupted and slow and the costs higher than they should be.

"These small communities report that they need new schools or other construction work suitable for winter employment, but that they have not enough skilled labor on the relief rolls and cannot afford to hire it from local funds. They want a somewhat more liberal proportion of WPA funds to be used for non-relief skilled labor, which they assert would prevent inefficiency and waste due to weather conditions. In lieu of that, they want local authority to use WPA labor for other civic purposes (including maintenance work) in bad weather.

"The suggestion is also sometimes made that WPA workers should be given full-time employment in summer and part of their wages held over and paid to them in winter when work is impracticable.

"Small communities feel widely unable to raise money for the construction projects of which they feel most in need. They want a somewhat more liberal proportion of WPA funds to be used for materials, equipment and non-relief skilled labor. The kind of projects they can afford to sponsor do not increase property values and prospects of greater future tax returns as much as the projects which they cannot get approved. They keep on applying for the projects they need and want, and keep on resenting their rejection."

Numerous statements of benefits to small communities appear in the report. Here are three paragraphs from the Alabama State Appraisal Committee:

"Physically and spiritually, little towns have been immensely benefited by these building projects. The Committee also noticed in the briefs that this new stirring of the creative spirit by means of public monies had unexpected influence for good upon private investors. Everywhere the example of the works project leaders encouraged private citizens to improve the appearance of their places of business and of their homes.

"Thus the spiritual value corresponds to the economic value deriving from the tremendous public spending that has gone on the past five years. These are permanent gains. In the end it may even be agreed that such gains offset the obvious losses of the worst depression that this republic ever endured."

Return to Private Employment

Pointing out that workers are often afraid to leave WPA jobs for temporary private employment, either for fear they will not get back on the WPA at all, or will get back only after weeks of delay and a period of being on direct relief, the report says:

"The arrangements the WPA has made to ensure and facilitate such return are still considered insufficient; any actual delay at all is regarded as a needless injury to both the worker and the community, as a severe discouragement to the workers in taking temporary private employment, and as a serious grievance of farmers and others who need temporary help. The fact that there are two organizations which have to cooperate, the local direct relief agency and the WPA, is sometimes regarded as responsible for the delays. Nothing less than a smoothly-functioning automatic process of return to WPA work after temporary private employment will meet these demands, and anything else will be regarded as unnecessary bureaucratic red tape."

Work Relief vs. "Dole"

Three questions were asked to ascertain the general benefits of work relief as compared with direct relief. First, what part of the unemployed should be provided for by direct and what part by work relief. Almost unanimously the reports declared that direct relief should be restricted to the aged, the sick and the physically handicapped, and that all the able-bodied unemployed should be provided for by work relief.

The second and third questions asked whether direct or work relief was preferable in its effect on the community and on the worker. Again the answers were almost unanimously to the effect that work relief is highly preferable with regard to its effects on both the community and the worker. The benefits to the community from WPA projects and the maintenance of the self-respect of the worker were the chief reasons given for preferring work relief. These answers were almost invariably the same in reports which were critical of the WPA as in other reports which expressed general commendation of the WPA.

Typical of the comments on this subject is that from County Commissioner Marion Henrie of Delta,

(Continued on page 108)

The New Water-Softening Plant,

Zeolite Installation a Notable Addition to Well-Operated Filtration Plant

On December 30, 1937, the Water Board of Clarksburg, W. Va., authorized an expenditure for increasing the filter capacity and adding zeolite water softeners, as it was felt that future conditions necessitated the utmost flexibility in design, and operation should be such that either increased filter or softener capacity would be available. There is a certainty of future governmental flood-control projects in the watershed which will increase the storage capacity and somewhat change the character of the water. Increased operation and further development of the large coal fields may be expected, since less than 3 per cent of the 2,511,478,090 tons of minable coal has been removed.

New Plant in Old Building

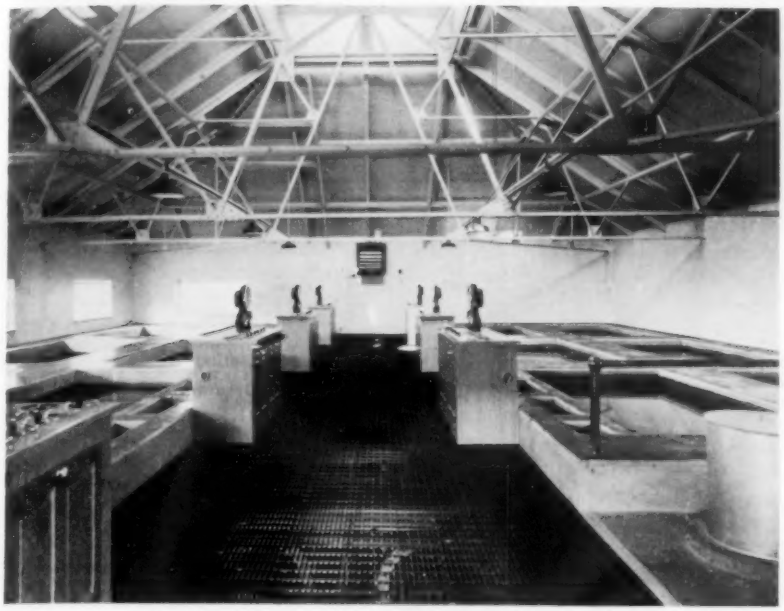
From the standpoint of economy, as well as to maintain a harmonious appearance with the old plant and obtain a compact layout for convenient operation with the present filters, it was decided to use the old boiler house for a new zeolite installation. The new layout in the old building includes a treated water basin of 80,000 gallons capacity occupying the space below the filters and softeners, with an entrance flume serving as a mixing chamber for the softened water and filtered water from either the old clear-water basin or the new filters, and new suction connections for the high-service pumps located at the opposite end of the basin from the inlet flume. Above the basin, along one side of the building, are four open, gravity-type downward-flow softener units. On the opposite side of the building are three similar-sized mechanical filters with the end panel on this side of the building developed for entrance, stairway and operating accessories. Both the filters and softeners are reinforced concrete boxes 225 square feet net area and 10½ feet deep, with all pipe connections taken from the front or pipe gallery wall. A space 9 feet 10 inches wide between the filters and softeners contains all piping and controls. The operating floor is a steel grating to give maximum light and air in the pipe gallery, through which is a grating walkway with doors at each end giving access to other parts of the plant. A new wood roof with asbestos shingles was laid on the old steel work, and revisions were made to the monitor to improve lighting.

Brine and sump pumps are installed at the end of the pipe gallery, and the booster pumps in the machinery room basement of the old filter building. A new electric service was brought in for the pumping units and new lighting system, since the old pumps and lights were both served with natural gas from the Water Board's own wells drilled in 1914.

Separate influent, effluent and wash-water headers for both the softeners and filters are provided. The two influent headers are interconnected at the end of the gallery with a control valve. The influent to the softeners is connected to the venturi meter on the discharge lines of the booster pumping units. The influent to the new filters is cut into the main effluent line from the coagulating basins outside the building and is so valved that the water from the basins can be divided as desired between the old and new filters. The effluent from the softeners is discharged into the mixing flume entering the treated water basin under the new units. The effluent from the new filters may be discharged either to the old filtered water storage or, if desired, directly into the same mixing flume as the softener effluent. This arrangement makes it possible to operate the addition entirely independent of the old plant. An air header is provided for the new filters, and a brine header for the softener units. A common drain line serves both systems. The old filters, equipped with low-rate wash and air agitation, have given satisfactory service. Accordingly, the air and wash-water piping from the old blower and wash-water pump are extended into the new

Entrance to the New Softening Plant at Clarksburg

Clarksburg, W. Va.



The New 4,000,000-Gallon Zeolite Water-Softening Plant

gallery and connected for use with the new filters.

The Softeners

The plant laboratory records for the last few years show unusually wide variations for pH, turbidity and hardness, and indicate that to obtain a water with less than 70 to 80 ppm in hardness would require at least six months' operation of the softeners each year, handling a water containing from 80 to 392 ppm of hardness, which is principally calcium sulphate. The percentage of reduction below 80 parts per million will be determined by experience and the wishes of water patrons. Because of intermittent operation and widely fluctuating hardness, it was decided to use the open, gravity down-flow type of softener units with natural greensand as the softening medium. The greensand is 66 inches deep, giving a removal capacity of approximately 3,500,000 grains of hardness between regenerations. With interchangeability in mind and also the presence of an experienced crew accustomed to handling the older filter units, the operation and controls were made similar to those in the old plant.

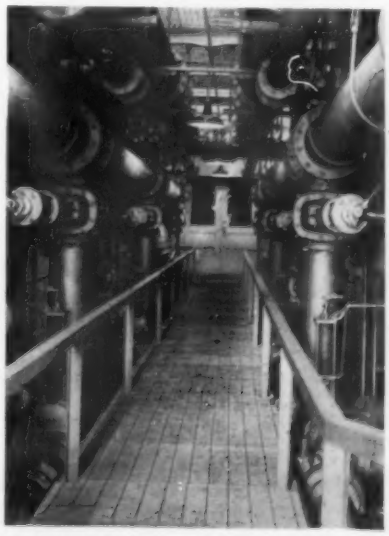
It will be expedient to filter the water previous to softening most of the time. Two variable speed booster pumping units are installed to lift that portion of the water to be softened from the unsoftened filter water reservoir through a venturi meter and deliver it into the softener units. Because of the possibility of operating during periods of low turbidity without filtering the water prior to softening, the softener effluent is also connected at the end of the gallery with the filter influent so that coagulated water direct from the basins can be fed from this bypass direct to the softeners.

The common method of softening part of the supply to zero hardness and remixing this with unsoftened water to obtain a water of the desired hardness, is used. When softening filtered water, the rate is controlled by setting the variable-speed booster pumps at the desired output. When unfiltered water is softened, it is controlled by setting the master control manually at the softeners to obtain the desired quantity. The control on the softening unit is so arranged that when it is set for automatic control the operator is required only to be sure that enough softeners are on the system to take the maximum quantity and to attend to the regeneration. The automatic master control operates through float units directly connected to the controller of each softener so that the level on the softeners is maintained within a 24-inch range regardless of the discharge of the booster pumps. The master control is a similar set of floats attached to the filter controllers and is manually set at any desired elevation to give the total capacity desired through the new filter units. The influent to the filters has a separate high-water automatic control to protect them from overflowing.

Regeneration

A two-section salt storage outside the building next to the plant railroad spur has sufficient capacity for two carloads of salt and is connected into a small common brine manhole which houses the valves and gates controlling the water and brine lines. From this manhole a straight 4-inch Transite pipe delivers the brine to a pump located in a pit in the pipe gallery. From here the brine is pumped into the header in the filter gallery, where it is mixed with diluting water controlled by a mixing valve from the pressure system and delivered to the brining systems of the individual softeners. The starter for this pump is located on the upper oper-

(Continued on page 109)



The Pipe Gallery for Filters and Softeners

Saving a Segment Block Sewer

Leakage at Joints Checked by Inexpensive Method

In 1929 the town of West Hartford, Conn., constructed 3,000 feet of 36-inch segment block trunk sewer. Built through an undeveloped section, the sewer roughly parallels and is crossed twice by a watercourse which is practically dry in the summer, but which has a considerable flow during wet weather. Because of the nature of the soil, which is mostly clay and hardpan, there is very little seepage from the stream except where the soil has been disturbed, as in the backfill over the sewer. This concentrates the water directly around the sewer at these points and builds up a pressure which finds any weaknesses in poor joints, of which there were a good many in this section of sewer.

A few years after the sewer was completed, we discovered a great many depressions over the line, which, by test, showed definite points of leakage into the sewer. Under one of the made-work programs, the sewer was stripped at the points which seemed to be the worst and covered with concrete, an attempt being made to bond this covering with the original concrete in which the sewer had been laid up to the spring line and thus form a complete envelope around the sewer. Although conditions were improved for some time by this work, the water soon found the weak spots again, and conditions were about as bad as before. This was due not only to the lack of bond between the new work and the old, but also to the fact that water and mud had worked into the concrete of the foundation when it was laid, making it somewhat porous.

Condition of Sewer Before Lining

Reconstruction Considered

It therefore became necessary either to rebuild the entire sewer or to seal it in some way from the inside. The latter method seemed to be considerably less expensive and probably fully as satisfactory. The sewer had been designed in the first place with a slight excess in capacity, as the plans had included an area which it was later found could be sewered to better advantage in another direction, and it was therefore possible to reduce the internal diameter to 33 inches and still maintain the required flow. The two lining methods considered were to thread a pre-cast pipe through the sewer or to apply cement with a pressure gun.

The first method was discarded for several reasons. The cross-section of the existing sewer was distorted enough so that pre-cast pipe would have had to be several inches smaller in order to make it possible to thread it through. The sewer would have had to be broken in several places in order to have access. The space between the inside of the original sewer and the outside of the new pipe would have had to be thoroughly grouted so as to obtain a solid structure, and this in itself would have been quite an expense.

Gunite Lining

It was decided therefore to use the second method, and to line the sewer with Gunite. A contract was awarded to the National Gunite Contracting Co., of Boston, Mass., to do all the work and furnish all labor and materials for applying about 1½ inches of reinforced Gunite to the interior of the sewer. The town agreed to dewater the sewer and maintain it in a reasonably dry condition in the vicinity of the actual operations.

The specifications required the placing of electrically welded mesh reinforcement of 14-gage wire of 2-inch mesh both ways lapped 4 inches on the ends and sides and tied at intervals of about 18 inches. The Gunite was premixed in the proportion of one part cement to three parts of sand for the invert section, and one to four for the arch section.

Special Equipment

This is one of the smallest sewers in which such a lining has been applied, and it presented difficulties because of cramped quarters. The shooting operations were conducted by a nozzleman seated cross-legged on one end of a rubber-tired carriage built especially for this purpose. The carriage consisted of a framework of 1-inch structural angles about 6 feet long and 1 foot wide, mounted on 8-inch roller-bearing rubber-tired wheels near each end, and with 1-inch boarding set between the angles for a deck. The nozzleman's assistant pulled this carriage backward from the work as the shooting operation continued. A similar carriage was used for removing the rebound sand, which was shoveled into buckets, loaded on the carriage, and pulled along the pipe to the next manhole, where it was raised by a laborer to the top.

The principal equipment used for the work was a 330-foot Worthington compressor, an N-1 cement gun, a 2-bag mixer, a 1,500-watt generator, a gas-engine-driven ventilator of 1,500 cubic feet per minute capacity, pumps, hose, etc. The work was carried on from four set-ups along the line, and the equipment was hauled by an 80-hp trac-

with Gunite Lining

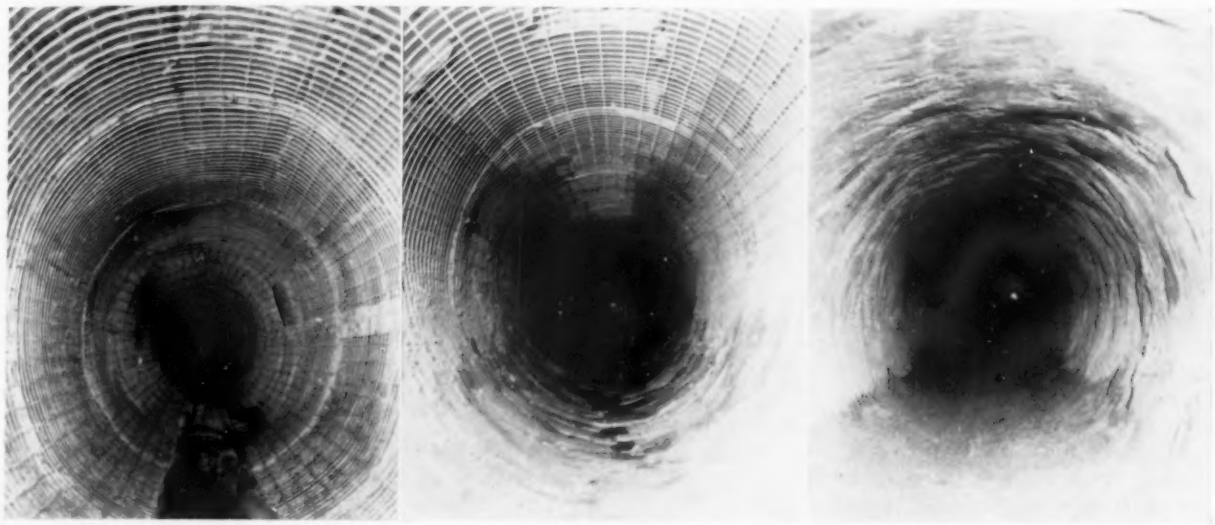
By F. B. CHAMBERLIN
Town Engineer,
West Hartford, Conn.

tor on skid-mounted platforms from one set-up to the next, since the ground was too soft for the use of wheeled equipment.

A total of 1,814 sacks of cement was used, resulting in a coverage of 14.7 square feet per sack of cement. About 30,000 square feet of wire mesh was used, supported on the invert by a furring bar to maintain its position and prevent its being forced down by the trampling of the men working in the sewer.

lower end of the section and pumping from that point. As a result of this, the leakage was very much lessened and was apparently confined to a few isolated spots, so that it seemed safe to start Guniting. As these various small leaks were closed, however, the pressure on the outside gradually built up until it forced water through the newly shot lining, causing it to slough off in spots. It was finally necessary to allow these leaks to continue to flow, working the Gunite in as close as possible and then plugging them later with Sica, a very quick-setting cement. As a result of this trouble, the lining of the first section is rather rough and somewhat thicker than was planned, but the infiltration has been completely overcome. For the rest of the line, sump holes were dug alongside the pipe and a foot or so below it, and by continuous pumping near the vicinity of actual operations it was possible to reduce the ground-water pressure considerably. A few isolated spots had to be left and plugged later with quick-setting cement.

No measurements have been taken to determine the actual results obtained, but observation has made us certain that infiltration has been reduced more than 90 per cent. The brook, at least, is now flowing in its bed rather than a considerable portion of it flowing through the sewer as previously.



THE LINING PROCESS

Left—Mesh reinforcement in place and shooting operations going on ahead. Center—Invert section completed. Right—Lining completed

Results

The work was started about October 25 and completed December 17, 1938, but there were only 29 working days during the shooting because of bad weather conditions. Excessive water caused the most difficulty throughout the entire job. It was comparatively easy to take care of the flow in the sewer by placing bulkheads in certain manholes above the operations and pumping the sewage at these points, but the ground water was a much more difficult problem. The first section was underneath a concrete road controlled by the State Highway Department and it was desired to avoid any excavation at this point if possible. We tried to lower the water-level by breaking into the hollow tile from the inside at the

Apprentices Train for City Hall Jobs in 18 Cities

EIGHTEEN cities report successful use of the apprentice system to train recruits for administrative jobs in municipal government, according to a study by the International City Managers' Association.

Including Cincinnati, Ohio, which has 87 municipal university students working part-time in the City Hall, the 18 cities employ a total of 108 apprentices. the study showed. Other cities in the group include Dallas and Wichita Falls, Texas, and Stoughton, Mass., which have been training apprentices since 1934; San Diego, Calif., Toledo, Ohio, Morgantown, W. Va., Beloit, Wis., Westerville, Ohio.

Ten of the 18 cities said that their apprentices enter training with the understanding that satisfactory work will gain them permanent appointment. Eight former apprentices of these cities later became city managers. Others took municipal appointments such as engineer, housing authority official and general clerk. A number went into state service. Only three changed their fields to private business.

Rehabilitation Program of the

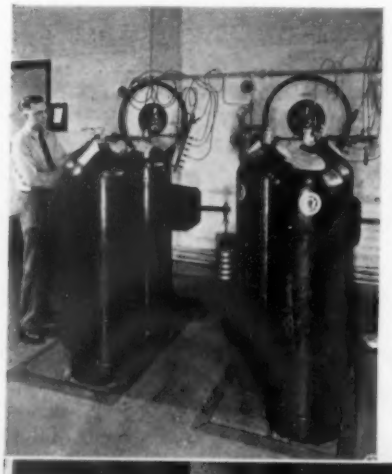
By Leo Besozzi
Member,
Board of Sanitary Commissioners,
City of Hammond, Ind.

The water works of Hammond, Ind., is owned and operated by the municipality and supplies the entire city and the adjoining communities of Munster, Ind., and Lansing, Ill. In addition to this, several large industries in the adjoining community of Calumet City, Ill., are supplied. All the improvements covered in this article have been made during the past five years, since the management of the water works became vested in a five-man board nominated by the Mayor and elected by the Common Council.

The major construction items have been finished and placed in operation, except that the construction of water mains has not been wholly completed. The items completed and those now under construction are:

1. A modern water purification plant of 20-mgd capacity.
2. A steel elevated water storage reservoir of 1.5-mg capacity.
3. The construction of various large water mains designed to improve the hydraulics of the primary water distribution system.
4. The construction of various small water mains to eliminate dead-ends in the secondary water-distribution system.
5. The construction of a new meter repair and storage building, garages and a new material storage yard located on the site of the elevated storage tank. This improvement will house the maintenance division of the water works.
6. The construction of meter vaults and piping connections to the Hammond distribution system so as to provide a source of water supply for the adjoining towns of Munster, Ind., and Lansing, Ill. Additional improvements were made within the limits of these towns so as to properly distribute the new supply within their own borders.

In addition to the above, various improvements have been made in the operating divisions of the water works. These consist chiefly of the installation of suitable laboratory equipment to enable the Water Department to make quality tests on all bulk materials purchased, such as coal, chemicals, etc. New methods have been installed in the commercial divisions to provide for more efficient operation and to further provide for the prompt collection of all revenues due the department. Efficient operating schedules have been set up in the filtration and pumping plants, and it is contemplated at this time to systematize the operations of the Maintenance Division.



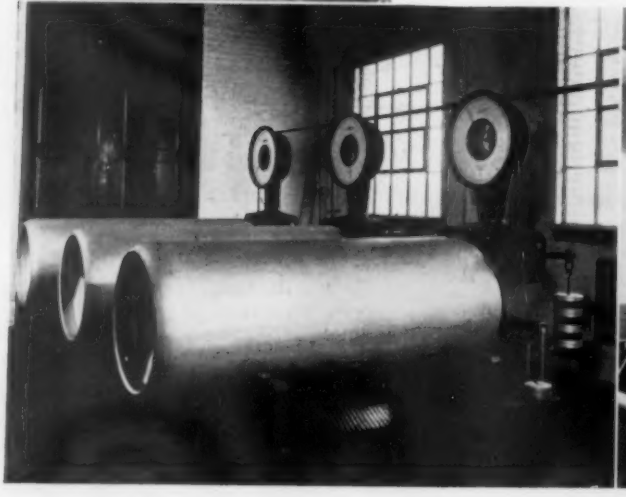
CHEMICAL TREATMENT

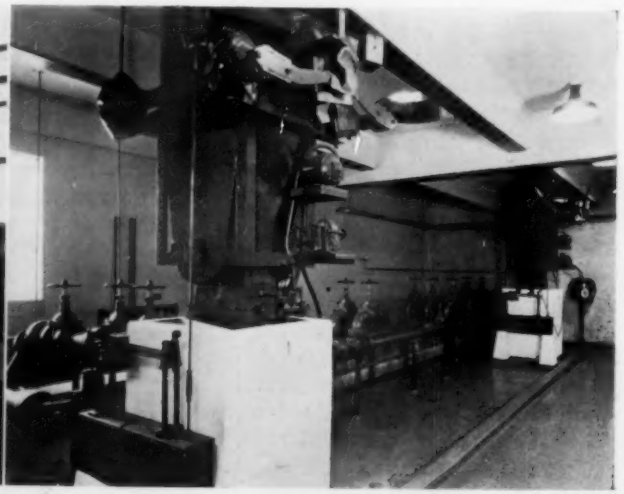
1. Ammonia room, showing scales and 150-pound cylinders. 2. Chlorine room, scales and 1-ton cylinders. 3. Chemical feed room

The purification-plant project consists of a self-contained filtration plant with a rated capacity of 20 million gallons per 24 hours and the construction of shore protection and made land along the shore of Lake Michigan where the plant is located. The plant site has now been landscaped and beautified and is utilized as a city park. A public bathing beach immediately adjoins the site on the west. Adequate railroad facilities have been provided so that materials can be shipped to the plant in freight-car lots. Ample space is available to permit the future expansion of the plant with a minimum of expense.

Low-Lift Pumping

The low-lift pump-room contains low-lift pumping equipment required to take the water from the present suction well and deliver it





Hammond, Ind., Water Works

A Five-Year Program Approaching Completion Includes New Filters, Elevated Tank and Mains

to the reaction basins, provisions having been made for applying chemicals in the conduit leading to the reaction basins. Three cast iron intakes serve the suction well. The principal intake is 42 inches in diameter and extends one mile from shore to a crib. The other two intakes are 24 and 30 inches in diameter, extending out ½-mile. They are used only in emergencies, since they supply an inferior raw water. The pumping equipment consists of three Dayton-Dowd centrifugal pumps of 6,950, 12,500, and 15,000 gpm capacities or a total of 50 mgd. They are electrically driven by Elliott synchronous motors, and all pumps, motors, auxiliary equipment and General Electric control panels are designed so that service can be maintained with any one unit out of service. A Sparling meter and chart recorder gives the pumpage rate, and records it continuously.

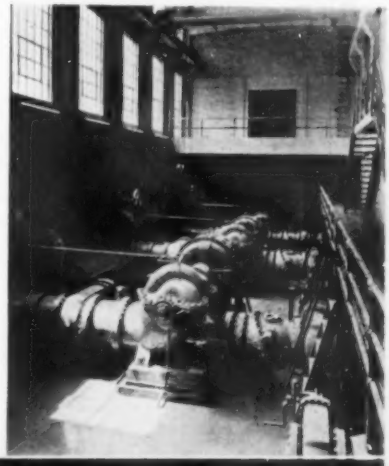
Reaction and Sedimentation

The reaction basins are constructed in two units, each unit consisting of four small basins. The mixing period is 30 minutes, the mixing being performed by vertical mechanical stirring devices of our own design with 2-speed reversing Howell motors and Universal Gear Corp. speed reducers. These tanks are so arranged that any unit may operate singly in case of necessity for repairs.

There are two "round the end" sedimentation basins with four hours' detention period at the rated capacity of the plant. These basins are constructed of reinforced concrete and are so controlled by Columbian sluice-gates and conduits that either basin can be cut out for cleaning or repairs without interrupting the operation of the plant. The basins may be operated either in series or in parallel, with provision made for double coagulation.

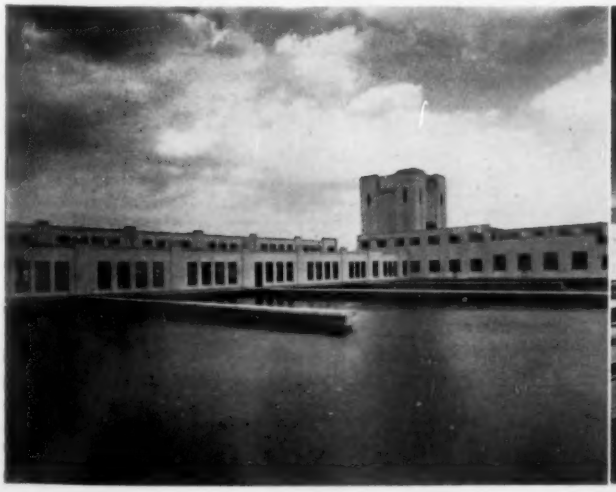
The Filters

The eight mechanical gravity filters are equipped with 4-inch cast iron underdrains spaced 12 inches on centers, which discharge into a 36-inch concrete manifold located on the underside of the filter-box slab in the filtered water reservoir. The filtering material consists of 18 inches of gravel and 30 inches of sand. Six wash-water troughs are provided of sufficient capacity to accommodate a wash-water rise of 42 inches. Ten-inch wall castings provided with blank flanges are placed in the pipe gallery walls to provide for the future installation of either a filter surface wash system or a sub-surface filter system, as may be required. Each filter is provided with a Bacharach operating table containing a lever for each of the five hydraulic valves and Simplex loss-of-head and rate-of-flow gages. All water passages immediately adjacent to the filters are accommodated in a pipe gallery where the hydraulic valves and rate controller are installed. The filters are designed to operate at a rate of 125 million gallons per acre



FILTRATION AND PUMPING

4. *The baffled sedimentation basins.*
5. *The reaction basins and filters.*
6. *The low-lift pump-room with three centrifugals*



daily and are capable of satisfactorily handling an overload of 50 per cent for reasonable periods of time.

Treatment

Dry feed equipment for chemicals consists of four Bacharach units, one for feeding Ferrisul or General Chemical Co. alum, one for alum or lime, and two for activated carbon. Each machine is equipped with a solution tank of a relatively large capacity provided with a Patterson automatic agitating device, with General Electric control, and baffles as well as circulating water jets. At present chlorinated ferrous sulphate is used with lime as a coagulant, both being fed directly into the raw water. Cliffchar activated carbon is used for taste and odor control since this is the most difficult problem the plant has to combat.*

There are three Wallace & Tiernan chlorine feed machines, each having a maximum capacity of 300 pounds of chlorine per 24 hours, chlorine being fed from 1-ton containers. There are two W. & T. ammonia feed machines having a capacity of 100 pounds per 24 hours, ammonia being fed from 150-pound cylinders. Both chlorine and ammonia are purchased from Pennsylvania Salt Co. and applied to the raw and filtered water.

Space has also been provided for the inclusion of two additional dry feed machines, one additional chlorinator, one additional ammoniator, and two solution tanks with two outside feed tanks for feeding ammonium sulphate. The plant is so designed that future installation of carbon filters or of an ozone plant is possible. In the headhouse and over the pumproom 2,400 square feet of floor space has been provided for the storage of chemicals and 800 square feet for the storage of chlorine and ammonia containers.

Filtered Water Basin

The filtered water basin has a capacity of 5,000,000 gallons. It is constructed of reinforced concrete and covered with 3.5 feet of excavated material taken from the site. A portion of the reservoir underlies and supports the filters; the rest is of flat-slab construction of sufficient strength to carry a load of 500 pounds per square foot of roof surface. It is connected to the present high-lift pumps through a 42-inch steel pipe, provided with a control valve. A Republic recording depth gage operating within a range of 20 feet is provided.

Buildings

All superstructures are of brick masonry and fireproof construction, designed architecturally to be suitable for location in a park. The frames of the superstructures, which house the filters, reaction basins, storage space and pumproom, are of reinforced concrete, while the frame of the headhouse and housing of the wash-water tank is of steel.

Wash-Water Tank

The plant includes a Western Gas Construction Co. 100,000-gallon steel wash-water tank, enclosed and located above the headhouse, as an integral part of the headhouse superstructure. The tank is supplied by a 3,000-gpm Dayton-Dowd wash-water pump and is also connected to the high-lift pump station with a 16-inch emergency pressure pipe line. The wash-water tank is equipped with a Republic depth gage, a recorder, and a meter to accurately measure the water used for washing the filters.

Elevated Storage—an Economy

The construction of the elevated storage reservoir was begun on August 23, 1937, and was completed on May 1, 1938, by the Chicago Bridge and Iron Co. Prior to the construction of the tank, studies were made for improvements to both the existing high-lift pumping station and the distribution system, since both were badly in need of strengthening. As the funds available for construction purposes at the time amounted to approximately $165,000, the problem resolved itself in analyzing the various problems so as to obtain the maximum benefit from the funds available.

The existing pumping station is approximately 17 years old and comprises three pumping units and a steam plant. Two of the pumping units are Worthington cross-compound crank and flywheel steam pumps. One of the units was originally purchased and installed in a former pumping station about 28 years ago. It was moved to the present station 17 years ago, at which time the other unit was installed new. The third unit is a Worthington single-stage centrifugal, direct-connected to a General Electric 500-hp, 2,300-volt electric motor, installed about 12 years ago primarily for emergency service. The three pumps each have a rated capacity of 15 mgd, or a total plant capacity of 45 mgd.

Upon checking the bond issue used to finance the construction of the station, it was found that 37½ per cent of the bonds had been retired and that 62½ per cent still remained unpaid, representing an unpaid amount of approximately $125,000 on the station equipment, not including the building. It was therefore not deemed advisable to effect a drastic change in the high-lift pumping station unless a clear-cut saving in operation, including the unpaid balance on the existing equipment, could be shown. The advantages of augmenting the pumping capacity of the plant as against the construction of the reservoir and strengthening of the distribution system were evaluated and compared, with the result that the greatest benefit could be obtained by the construction of the tank, which in this particular distribution system, with the center of consumption located remotely from the pumping station, had many advantages. Since the tank would equalize pressures in the distribution system and the rate of pumping to meet peak demands, it would not only reduce operating costs but also defer the proposed additions to the pumping station. Furthermore, it would also provide reserve supply for fire demands or to carry over for short periods of time in the event of possible failure of mains or pumping equipment and would supplement the under-

(*Continued on page 115*)

*See "Experiences with Activated Carbon at Hammond, Indiana," *Journal* American Water Works Association, October, 1937.

New Strong Section Economical Concrete Curb Is Specially Designed for

Low-Cost Paving in Red Oak, Iowa

By Arthur E. J. Johnson
City Engineer

To produce an economical low-cost pavement on a city street, the engineer must have a curb to confine the pavement and insure stability at the edges. The cost of most standard curbs is too high for some residential sections of the average small city of 6,000, even if it is out of debt like Red Oak and seven other cities in the United States of between 5,000 and 10,000 population. By careful design and by giving particular thought to the curb, we are now laying a dense clay-bound gravel base surfaced with a clean aggregate asphaltic wearing surface, held in place by a very low-cost concrete curb with enough integral gutter to give a grade line for the roadway.

The New Section Concrete Curb

The standard curb with integral gutter requires a considerable amount of concrete. We have several types in our city, from the old straight curb to the reinforced curb and gutter sections, all varying in length from 7 to 40 feet per section. With so many unimproved streets bordered by properties that cannot stand an assessment cost for a high-grade paving and curbing, our first thought was given to reducing the cost of the curb.

We have designed a section of curb with a very narrow gutter, wide enough only to act as a grade line for the completed paving, and yet with enough stiffness to withstand the blows of heavy vehicles. The final design, which has the section and strength of an angle-iron, is 10 inches high at the back, 8 inches wide at the bottom, 6 inches thick at the toe of the gutter, with a curb having a section 3¼ inches wide at the top, 4¾ inches wide at the bottom, and with a 3¼-inch gutter. Within this section are three ⅜-inch round steel rods for lateral strength.

The original project calls for about 5 miles of this new section gutter, and it has proved very popular, more than 5,000 feet of it having already been completed. With a cross-section as small as this, the cost of the curb in most localities will be so low that even the streets where 25 per cent of the lots are vacant can be improved with curb, gutter and surfacing, without any serious objection or undue cost to the property owner.

The concrete for the curb is mixed in a batch mixer at least two minutes, using one part cement, four parts sand and gravel, and about two parts clean gravel, depending upon the grading of the sand-gravel material. We have been using a No. 5 Iowa State Highway Commission specification sand-gravel mix, with Nebraska No. 4 gravel as an admixture to the mortar produced by the cement and Class 5 aggregate mix. Iowa Class 5 concrete mix is a sand-and-gravel mixture that runs about 50 per cent above a No. 10 screen and 50 per cent below. A 3,500 to 4,000-pound concrete can be obtained at low cost by adding straight, clean gravel to the mortar mix of the Iowa No. 5 mix.

A Sample Section of the New Economy Curb in Red Oak, Iowa

We are in a locality where all concrete aggregate as well as cement must be shipped in, so that the material costs run higher than they do in other sections. Even with this handicap, it has been possible to "deliver" a finished street at a cost of $25 for each 45-foot frontage. This includes the curbing with the modified gutter and the pavement described below. The paving is being carried forward only where 100 per cent of the property owners are asking for it on the street. They sign a waiver eliminating all legal procedure necessary for a special assessment. As the work has progressed, new signers have been filing at the city office, so that at the time of this writing there is three times as much work signed up as has al-

LAYING A SECTION OF THE NEW CONCRETE CURB IN RED OAK, IOWA

Left—Forms in place ready for pouring. Center—Curb in place with forms stripped. Right—Close-up of curb before laying pavement

ready been built.

Low-Cost Paving

During the last three or four years, we have had considerable complaint about dust from the high-speed traffic that uses the semi-improved streets of the city, which are covered with cinders. The dust raised by automobiles traveling faster than ten miles an hour has created a real nuisance on residential streets. At first, consideration was given to oiling the cinders, but this was vetoed, since there is a considerable percentage of coke in the cinders that have been spread. With a surface of cinders composed partly of coke and partly of clinkers, it was inevitable that the coke surface would wear out so rapidly that in a year or two the street would be a veritable washboard.

Upon the completion of the curbs and gutters to grade, the laying of the clay-bound gravel base is begun. The city is fortunate in having a gravel-pit with the proportion of clay just right to make a natural dense stabilized base. After this is spread, graded and rolled, the surface is primed with 0.3-gallon per square yard of SC-2 asphalt, which is allowed to cure. When all tackiness has gone, 0.3-gallon per square yard of SC-4 or MC-3 is applied, followed immediately by about 25 pounds per square yard of hard limestone passing a ½-inch screen and retained on a 3/16-inch screen, hand-spread, broom-dragged and rolled into place. Then, 0.3-gallon per square yard of MC-3 asphalt is applied, followed immediately by 25 to 30 pounds per square yard of clean limestone of the same size, which is broom-dragged and rolled into place. The final operation is the application of 0.2-gallon of RC-2 asphalt, using plaster sand as a blotter to fill any voids in the limestone interlocked binder courses, and to give a smooth dense surface. Five miles of paving of this type 24 feet 4 inches between curbs is under construction.

Sanitation Mounties

Putting 29 Foremen on Motorcycles Released 77 for Work in Congested Sections

By LOREN G. KURTZ
Director of Motor Equipment and Maintenance, Department of Sanitation, New York City

THE new three-wheel motorcycle being employed at the present time by the Section Foremen of New York's Department of Sanitation is another step in the inauguration of the increased efficiency program started by Mayor LaGuardia.

Indian Tow-Car Quadruples Coverage by New York Sanitation Foremen

Traveling at a governed speed of 25 miles an hour, these tricycles have made it possible for sanitation officials to relieve the tension on the inspectors in the outlying districts and allow one man to cover the territory previously traversed by four men. Seventy-seven extra foremen affected by this change have been transferred into more thickly populated territory. The efficiency of collection work has been greatly enhanced in the sections which they now supervise.

There are 256 of these sections, averaging six or seven square miles each and containing approximately 50 lineal miles of streets.

Some time ago Mayor LaGuardia stated that in Budapest, police inspectors patrol large areas on small motorcycles, and suggested that this mode of transportation be considered for city departments. The result is not a special motorcycle, but a standard three-wheel, two-cylinder Indian motorcycle or tow-car equipped with a governor holding speed to not over 25 mph.

The car has a leather windshield with a Pyroxylin top for the vision of the driver, this top reinforced by rubber hosing thick enough to withstand heavy wind pressures. Other features are leg-guards, wire wheels, a rear compartment for tools, and stoplight as well as rear bumper. The vehicle does 50 to 70 miles on a gallon of gasoline, and the maintenance cost is low compared with any other kind of practical transportation.

Of the 29 motorcycles which went into service in May, 1939, 24 are used by Section Foremen or Assistant Foremen of the uniformed division in areas in Queens, Brooklyn, The Bronx and Richmond. These boroughs have large suburban areas. Five machines are assigned to the mechanical division of the motor repair shops to expedite road service for the Department's fleet of 3,867 motor vehicles, worth $15,000,000, operating throughout the five boroughs of the city.

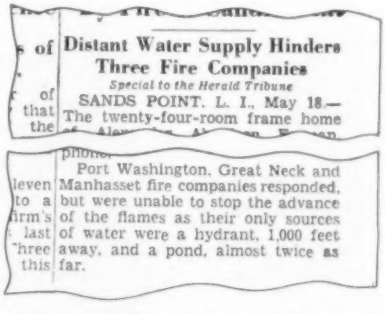
Below Is the 600-Gallon Tank Truck Described by the Author, and at Left Is One of the 2,500-Gallon Tank Trucks Recently Purchased by Los Angeles County from The Seagrave Corporation

Tank Trucks for Sure-Fire Water

By Joseph J. Davis
Chief Assistant, Department of Forester and Fire Warden, Los Angeles County, California

THIS department has pioneered in the development and use of tank truck fire apparatus, which is being increasingly adopted by city fire departments, especially where water is scarce. Los Angeles County, in common with all Southern California, has very little running water, and it is necessary to convey water to the fire. To provide supply for the tank trucks, we have installed throughout the mountain areas tanks of from 2,000- to 10,000-gallon capacity, and in some cases of 350,000-gallon capacity with rain-catchment areas as an integral part.

At first, we were forced to purchase standard freight-truck chassis and then have the water tanks, pumps, etc., mounted thereon. While these trucks are still working very satisfactorily, they are not truly fire apparatus, since it is impossible to expect a truck designed to haul freight or heavy pay loads to perform perfectly under the very different needs of a fire service.



Distant Water Supply Hinders Three Fire Companies

Special to the Herald Tribune

SANDS POINT, L. I., May 18.—The twenty-four-room frame home

Port Washington, Great Neck and Manhasset fire companies responded, but were unable to stop the advance of the flames as their only sources of water were a hydrant, 1,000 feet away, and a pond, almost twice as far.

Tanks Needed in Cities as Well as in Mountains

Consequently, for years we have endeavored to interest some manufacturer of standard fire apparatus in building equipment for us, and at the same time we were deciding on the size of truck and the water capacity necessary for our diversified business. Not only do we have the watershed vegetative growth problem, but also the protection of many thousands of mountain cabins, and in some cases palatial residences, along the foothills. So the apparatus had to be designed for both structural and mountain use.

We have found that the 600-gallon capacity tank is best suited for our needs, although we do have three 250-gallon tank trucks, and our various squad trucks are equipped with 100-gallon tanks. Further, all patrol cars, which are Ford or Chevrolet pick-up type, are equipped with 38-gallon pumps, hose reels with 250 feet of inch hose, and 70 gallons of water. These are effective in extinguishing roadside fires.

Now, continuing the improved design of tank trucks by manufacturers of standard fire apparatus, we can report that in 1937 the Seagrave Corporation of Columbus, Ohio, assisted in the design, and manufactured for the Department, five 600-gallon capacity type tank trucks and an additional one of the same type for the Santa Fe Springs Fire Protection Districts. (In passing, the County Fire Protection Districts, of which we have

30, with 35 pieces of apparatus and 184 officers and firemen, are under the jurisdiction of the Department of Forester and Fire Warden.) The illustration shows two views of these trucks, which are surpassing our expectations in performance. Built around Seagrave standard equipment, the specifications are briefly as follows:

Motor.—12-cylinder V type; bore 3¼-inch; stroke 4-inch; 185 brake hp at 3,500 rpm.

Wheelbase.—180 inches.

Weight.—Laden, without crew, 20,685 pounds; unladen 13,500 pounds.

Road Requirements.—Maximum road speed, direct drive 45 mph, with motor turning at peak of hp curve and when fully loaded, to negotiate a 30% grade with a rolling resistance of 80 pounds per ton. (On actual road test, apparatus developed at 3,100 rpm 50 miles per hour, which would indicate at the peak of 3,500 rpm 60 miles per hour or better speed. Standing start on the level developed 33 miles per hour in 500 feet when still in fourth gear. From a standing start on approximately 26% grade, the apparatus in first gear went into a 32.2% grade at 2,000 rpm, indicating enormous reserve.)

Tires.—9.75 x 20 Firestone balloon type, tractor tread, with dual on rear.

Ignition System.—Dual battery and magneto system.

Radiator Cooling System.—So designed that water at top of the radiator will not rise above 210° F when operating under maximum load and speed, regardless of atmospheric temperature. Auxiliary coolers provided for use while pumping, this being circulated by fire pump.

Tank.—600-gallon capacity of 10-gage Yoloy; all seams welded; two baffle plates with removable sections to permit access between compartments. An 18-inch manhole in center of tank; cap fitted with suitable air vent. Glass water gage incorporated in tank and located directly visible to operator. Strain on pipes eliminated by flexible connections. Outlet at each end of tank permits positive discharge of water regardless of road gradient. Water in tank is controlled by interposing a straight plug, double floating seat valve with 2½-inch suction inlet from tank to pump.

Main Pump.—Centrifugal, two-stage, parallel series type, 600 gpm capacity.

Capacity.—This pump developed on test a maximum of 665 gpm, with two lengths of 4-inch suction hose, lift of 9½ feet and pump pressure of 119 pounds. The primer is of vacuum type, capable of creating 24 inches of vacuum in pump and 2 lengths of 4-inch hose capped, in not to exceed 30 seconds, with not more than 1,000 rpm on the motor.

Pump.—Auxiliary: To make possible for apparatus to be used while moving, an auxiliary pump was installed to actuate reel lines and 1½-inch take-off on each side. This pump is of 50-gpm capacity, driven from power take-off, and delivered its capacity under test at 6 miles per hour with a layout of two 50-foot 1-inch lines, ¼-inch tips.

Fog nozzles, developed in this department, are carried on all mountainous area fire apparatus and metropolitan pumpers stationed in the Los Angeles County fire protection districts. A recently acquired Fire Protection District 900-gpm centrifugal pump unit, incorporating a 2,500-gallon water tank built in ten compartments, carries complete Griswold Fognozl equipment consisting of two 30-foot applicators, three 4-A dual Fognozls, one U. S. Navy type Fognozl applicator connected to four 300-foot lines of 1½-inch hose, one 2-A Fognozl and one 6-foot applicator connected to two 1-inch lines. All six lines are connected to the rear manifold for quick application. The Fognozl is most efficient in the control of inside structural fires and reduces water damage to an absolute minimum.

Other equipment on this apparatus includes a 1,250-watt Homelite generator, one 200-watt and two 500-watt Floodlites; and a Mine Safety Appliances combination hose mask, two-man outfit, including blower and 200 feet of oil-proof hose.

A tank truck belongs anywhere that water is scarce.

Transportation as an Element in Urban Rehabilitation

By CHARLES GORDON
Managing Director, American Transit Association

CONVENIENCE of access to the maximum number of people is the most important condition which establishes the value of urban property. Accordingly, the circulatory system of a city performs a function in its economic life comparable to the functions of the blood stream in the physical life of the human body. By changes in a city's circulatory system, therefore, the planner may actually cause existing property to shrink or increase in usefulness . . .

In all other phases of city planning, attention is directed primarily to the needs of those in the lower brackets of income. This is as it should be, for it is obvious that the greatest sufferers from lack of properly planned housing, unwise land use and inadequate recreational facilities, are the masses at the bottom of the economic scale who are forced to live under the conditions which they can afford. In respect to these phases of planning, the attention of planners is directed primarily to the needs of the masses and, accordingly, the profession of planning is raised to the level of a vital social activity.

But not so with the planning of transportation. This startling fact, it seems to me, challenges the consideration of all those who follow the profession of planning in its many aspects. The attention of city and regional planners today is directed almost exclusively to expediting the movement of automobiles. By this I do not mean to infer that much of the work currently under way for expediting the movement of automobiles into and out of major metropolitan areas by the construction of boulevards, bridges, parkways and superhighways, is not badly needed. But it is important to bear in mind that such construction does not promise a solution of the basic internal transportation problem of cities; and second, that such improvement as it does make, by being limited to automobile riders in large measure, overlooks the needs of the masses. . . .

As a consequence, available economic resources of cities are being expended to benefit automobile riders while the basic problem of urban congestion grows worse rather than better. I believe that once the planning profession is fully familiar with available authoritative physical and economic data bearing on this problem, it will become readily apparent that improvement of mass transit facilities offers the only available way of extricating urban populations from the traffic tangle that now ensnares them. The full significance of this possibility will become apparent to planners when it is recognized also that by the rehabilitation and proper development of mass transit the planner is offered the most effective available means of influencing, and to considerable extent controlling, the direction and nature of the physical growth of the city.

—Excerpts from a paper presented at the National Conference on Planning, in Boston, May 15, 1939.

Street Widening and Repaving in Charlotte, N. C.

Plaza and Queens Road Improved and Widened by Relief Labor

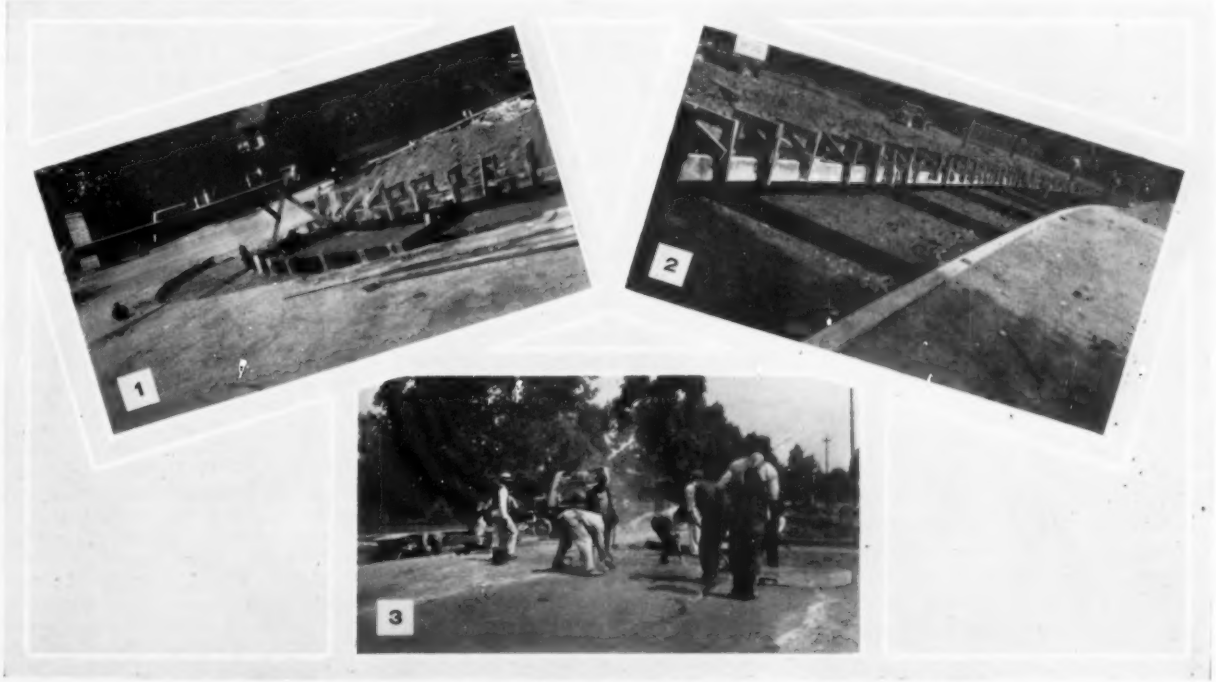
THE removal of two lines of street cars from the wide grass park areas in the center of the Plaza and Queens Road, Charlotte, N. C., hastened the need for the widening of the streets on either side. These old bituminous macadam pavements were not in any too good condition, and the use of the thoroughfares by the new buses that replaced the street cars hastened the need for repaving. Also, the width of the buses forced cars to use some 3 to 5 feet of the old park area for driving, particularly when there were cars parked in front of houses along the streets.

The widening projects consist of 3- and 5-foot widening strips being taken from the center park areas by building concrete curbs and gutters and cutting back certain crossings to improve traffic movement and also lengthening the radii on many of the curb returns. The WPA projects for this work make the cost run between $80,000 and $100,000 using WPA labor, and the city contributing 30 per cent of the cost through a $20,000 appropriation plus the services of city-owned trucks. The Plaza project is 4,470 feet long and the Queens Road project 10,350 feet long.

The Queens Road Project

On the Queens Road project the existing 15.8-foot existing roadways are being widened 5 feet 4 inches with a combination 6-inch concrete curb and 5-foot 2-inch gutters of 1:2½:4 concrete. The present asphalt pavement is to receive a paint coat of asphalt and be resurfaced with 1 inch of sheet asphalt. Because of this, the gutters are being poured 1 inch higher than the present pavement. The planting strip is to be fine-graded, topsoiled 2 inches deep, and fertilized and seeded. The street-car company is removing the rails from this strip, but leaving them in the crossings for the city to remove as widening reaches them. The gutter is 6 inches high with a 7-inch base and a 1-inch batter to a 6-inch top.

On the Plaza project a considerable length of the street requires replacing the old concrete curbs with new 5 x 15-inch concrete curbs. The old 17.5-foot roadways are to be widened with the same type of concrete curbs and gutters as on the Queens Road project. The present asphalt pavement is to receive a seal coat of 0.35-gallon per square yard of emulsified asphalt and 23 pounds of stone varying from ½-inch down to 8-mesh stone per square yard. The planting strip is to be improved as on the other project. Certain enter-



FORMS AND PAVING ON THE QUEENS ROAD PROJECT, CHARLOTTE, N. C.

1. Forms for new curb at street intersection, showing amount curb is being set back. 2. A 5-foot 4-inch widening along the center strip, showing the 10-foot sections of curb forms and method of bracing from the old curb. 3. A WPA gang placing concrete mixed by 2-bag Jaeger mixer seen in background

ing roads where the approaches have been inadequate are included in this work.

A careful routine has been established for the work on these projects that has resulted in a fairly uniform character of base being completed. For instance, the concrete gutters are poured in 10-foot panels divided by a 3/16-inch sheet metal strip cut to the contour of the gutter and curb together. This is well braced when the concrete is poured, and then pulled, leaving an open expansion joint which is not poured but left for the dust to fill.

The old asphaltic concrete pavement was getting rough and had been given a squeegee coat a few years ago, but the subgrade is not too good and is showing weakness under the pounding of the heavier traffic from the buses.

Other Projects

On Corville Road an improvement was instituted because the road was merely a clay subgrade. The property owners pay for the asphalt emulsion used and the WPA furnishes the stone, while the city has furnished the labor. This work has cost the property owners about 10 cents per square yard, or 15 cents per running foot, of property on a 22-foot road. Some of the work has been 24 feet wide, but most of it has been 22 feet.

The road was a 3- to 4-inch sand-clay subgrade, and the city spread a layer of 2½-inch stone and rolled it into the scarified base to stabilize it. This was primed with 0.4- to 0.5-gallon per square yard of coal tar. A layer of 1- to 2-inch stone was then spread and the whole shot with 0.5-gallon of the emulsion and covered with ¾- to 1-inch stone, rolled and shot again with 0.75-gallon per square yard and covered with stone screenings. The shooting was done with both bar sprays and hand sprays at intersections from the city's own 800-gallon Rosco distributor. A 10-ton Buffalo-Springfield roller was used for scarifying and rolling the road.

Car Tracks Covered Successfully

The problem of what to do with abandoned car tracks has stumped many a city engineer. Where the city cannot afford to remove them, and the legal machinery is lacking to force the street-car company to take them up, the only solution is to cover them. Some cities have tried to do this only to find that material shoved in the grooves, forming a poor riding surface. Charlotte has successfully covered many miles of street-car tracks without any great attempt at a heavy covering. A squeegee of asphalt is placed over the area to be paved, including the street-car tracks. Then the grooves of the tracks are filled and tamped about 50 to 100 feet ahead of the paving, and finally a 1-inch layer of sheet asphalt is spread and feathered and rolled.

Lloyd McC. Ross is City Engineer of Charlotte, N. C.

T. R. K.—871.

Letters to the Editor

Hire Traffic Consultants

To the Editor of THE AMERICAN CITY:

In the article "Does My City Need a Traffic Engineer?" in the April issue of THE AMERICAN CITY, it is implied that for those cities which cannot afford or do not have trained traffic engineers the city's only recourse is to go without trained advice, or call the state traffic agency.

State traffic engineers are usually well occupied with the state's many traffic and safety problems and are seldom able to familiarize themselves thoroughly with each city's particular requirements. The solution is traffic engineering consulting service.

When a police department installs a radio call system or finger-print identification file, the chief of police usually employs an expert in those fields.

In neither case is reflection cast upon the ability of the local officer, but rather he is commended for his astuteness in obtaining advice on problems which are of a specialized and unusual nature. The result is that the citizens obtain the greatest good from their tax dollars expended.

Yet, strangely enough, few city officials have recognized the fact that traffic planning, regulation and control are also municipal problems requiring technically trained traffic men.

A properly applied knowledge of the basic facts of traffic volumes, frequency of load impacts, speed, vehicle routing and future traffic trends is a valuable aid to the city engineer in efficiently planning street widths, new roadways and pavement designs.

A chief of police or safety director cannot schedule his personnel properly without a knowledge of the time and place of occurrence of traffic accidents. Violations and their relation to accidents cannot be controlled until actual facts are obtained upon which selective enforcement programs can be based. Traffic-control measures and devices are indeed very inefficient without basic installation data.

Many cities are meeting traffic problems as they arise without giving a thought to a comprehensive plan. The result is costly congestion, delay, retarded business, injury and loss of life.

For cities too small to justify a full-time traffic engineer, for larger cities in which competent trained traffic engineers are not available, the traffic engineering consultant fills a real need. Even in those cities which have recently acquired a traffic engineer, the consultant brings a wide experience, and often is able to lend assistance on unusual or difficult problems.

D. GRANT MICKLE,
Jensen, Bowen & Farrell.
Ann Arbor, Mich.

Traffic Engineers Needed

To the Editor of THE AMERICAN CITY:

The article in the April issue of THE AMERICAN CITY entitled "Police Chiefs Praise Traffic Signals" is very intriguing.

It is quite evident from the statements made that our smaller cities are very greatly in need of adequate traffic engineering service, because these statements demonstrate that the functions, advantages, and disadvantages of traffic signals are still greatly misunderstood.

It was my privilege to study the eleven signalized intersections in a community of 35,000. Signals were unnecessary at seven of these eleven intersections, and some other type of control would have been far superior, both from the standpoint of traffic movement and of accident prevention. In view of this study, you can imagine my amazement to find that a city of 11,000 population such as Greenwood, Miss., already has 17 signalized intersections and claims it needs 30 more. In all probability, it already has at least 16 too many now.

One statement in particular cannot pass unchallenged, and that is the paragraph in which it is stated that in the year before signalization of an intersection at East Hartford, Conn., there were two accidents, while in the succeeding eight months there was only one accident. The obvious inference the reader is supposed to draw is that the signals reduced accidents by 50 per cent. Exercise of either plain common sense or statistical methods should make it very evident that there is no basis for any conclusion that this signal has had any effect upon the accident rate whatsoever. It is about time to call a halt to the practice of over-emphasizing an infinitesimal sample of accident experience.

T. T. WILEY,
Assistant Traffic Engineer, Detroit, Mich.

A Ringing Challenge by a Forward-Looking Mayor

Excerpts from the Speech of* Mayor Cornelius D. Scully, *of Pittsburgh, Pa., Before the United States Conference of Mayors, in New York Last Month

Never in the history of the country has the demand for municipal services been so great as it is today. Not that our people are demanding unreasonable things from us. They are simply learning and asking their governments to provide those facilities which make community life safe and enjoyable.

We are asked to provide streets and boulevards which will move traffic quickly into and from our business areas, rather than promote congestion. We are asked to bring to all our people the possibilities in the prevention of disease which modern medical science has made available. We are asked to provide parks, playgrounds, and swimming pools, so that our children, and adults too, may have access to healthful, pleasant recreation. We are asked to make life and property safe by efficient police protection, and we are asked to cooperate with the Federal Government in making our social system safe and healthy, by providing low-cost housing and wiping out the blight of slums.

Increasingly, we are being asked to stop polluting and using as open sewers the streams, rivers, and lakes which God gave us as our heritage.

And, finally, we are asked to do our part in providing the bare necessities of life to the victims of an economic system which at present holds out no prospect of gainful employment to a large proportion of our citizens.

Today, the city governments of America, in cooperation with the Federal Government, are its chief instruments of progress. City government plays a part in every great national function, save national defense.

And while the responsibilities of cities grow apace, while a circle of expanding services continues and grows ever wider, we find ourselves the victims of a contracting system of finance. Our revenues shrink while our need for them grows.

Taxation of real property is the keystone of municipal financing. The years since 1929 have seen a tremendous decline in the assessments upon which the tax levy is based. In my own city, our last triennial assessment lopped off $100,000,000 — the equivalent at current rates of 2 mills taxation. That this trend to lower and lower asssesments possibly may have been checked at last in the nation is indicated by the experience of 1938, which shows a small increase in total city assessments for the nation as a whole—an increase of 8/10 of 1 per cent over the previous year.

While the value of city real estate declined sharply and then flattened out in the depression years, those new values which have been created have come chiefly in the suburban areas, which escape the taxing powers of the very cities that are chiefly responsible for the suburban growth.

To illustrate the increase in values which has taken place outside the limits of the large cities, my own city of Pittsburgh and its relation to the remainder of the county of Allegheny in which it is situated supplies a striking example.

The city of Pittsburgh today contains approximately one-half of the population of Allegheny County. The remainder of the county is suburban, industrial and residential territory, the great part of it indistinguishable from the city proper save by the imaginary lines of municipal government. In fact, one borough is completely surrounded by the city, and another's boundary begins in the middle of a Pittsburgh street.

In 1900, property in the city of Pittsburgh made up fully 71 per cent of the total real values of the county assessment; in 1910, 66 per cent; by 1930, the figure had fallen to 61 per cent, and by 1939, to only 58 per cent of the county assessment.

In other words, the growth of values has been relatively much greater in the areas surrounding municipal Pittsburgh than in the city itself, and it is very evident that this growth in values was largely attained by municipal improvements paid for by taxes levied on, and collected in, Pittsburgh proper.

Suburban Trend Undermining Cities' Tax Structure

The more improvements opening up suburban areas were constructed through the use of taxes raised in Pittsburgh, the more potential revenues Pittsburgh lost and the more its own tax base was narrowed. . . .

The picture is very clear. The more parkways Mayor LaGuardia builds, the more bridges and viaducts and tunnels he constructs, the more sources of taxation he loses, unless a process of municipal annexation quickly follows. And what is true of New York is true elsewhere. Funds derived from the taxation of city properties are used to make possible a process which undermines the whole tax structure.

No one, least of all those of us who abhor, as I do, the thick congestion, the brick and concrete deserts of over-built city blocks, can oppose the efforts of our people to find in the suburbs the sunlight and the green grass denied them in so many districts of our cities.

But we can and must, for the preservation of our city govern-

ments, find some way to expand the city's metropolitan government and taxing power to the satellite communities which derive benefits from our governments. We must find some way through which the increased increment in suburban lands, made possible by the improvements paid for by our cities and maintained by the services which our cities provide, can be utilized at least to pay the costs of the improvements which made that rise in values possible.

My own belief is that the speculative increment of land should be used to pay the entire cost of government—but that, as Sergeant Mulvaney said, is another story.

This condition was strikingly recognized in the comprehensive report which its urbanism committee made to the national resources committee in 1937.

Mr. Dykstra, former City Manager of Cincinnati, now President of the University of Wisconsin, was Chairman of the Urbanism Committee, which said:

"Unless, therefore, the boundaries of the political city can be stretched to include its suburban and satellite industrial and residential colonies, the economic and social base, upon which rests the welfare of both those who remain in the city and those who seek a partial escape from it, will eventually disintegrate. For no community in a democratic society can long remain a sound functioning organism, if those among its members who gain the greatest benefits from it escape from most of the obligations communal life imposes, and if those who obtain the least returns in the way of the necessities and amenities of life are left to bear the brunt of civic responsibility and taxation. If an orderly development and a higher level of life for the people of the imposing super-cities are to be obtained, some measures calculated to endow them with the capacity to act collectively as a political unit are indispensable."

The development of a method of metropolitan taxation which will bring to the cities the revenues derivative of the values they create, is the most pressing problem of municipal government today. We must find a modus operandi of catching up with runaway values—a problem more serious than the old problem of runaway industry which the Wages and Hours Law was designed to check. The taxing power of cities must be expanded to include the natural areas of urban development, and we must break the bonds of political encirclement.

For the cities of America, great as is their task, great as is their wealth and population, are the slaves of the states, and they must do as they are bid by legislatures which are gerrymandered and packed against them.

Pathways to Financial Good Health

In our present condition of servitude, there are a number of immediate courses which most of our cities can take to the advantage of their financial good health.

We should make it easy, convenient, and attractive to our taxpayers to meet their obligations. Too many cities, just like too many public utilities or anybody else who feels his customers *must* come to him, make tax payments a burdensome, lengthy, and unnecessarily unpleasant task for the citizen who pays the freight. In Pittsburgh we are willing to accept tax payments in monthly installments.

We should liquidate our delinquent taxes as quickly as possible. There must sometime be an end to abatement of penalties. Sequestrations and sales must eventually dispose of hopelessly delinquent properties. It may be heresy, but I, for one, can see no more justice in the government protecting a bad investment in real estate than in stocks, bonds, or a second-hand automobile.

We should develop as many self-liquidating projects as is possible. If, through the sale of municipally produced power or water, we can regain from the satellite communities some of the revenues we put into them, it goes without saying that we should do so.

We should as nearly as possible approach a pay-as-you-go fiscal policy, although this is admittedly almost impossible at a time when the cities of America, with some state aid, are spending $477,789,000 annually for direct relief alone, and other vast sums for the sponsorship of WPA projects.

Pay-as-you-go meets a tremendously strong opposition from many groups who should know better, but who nevertheless prefer to swallow their pills with sugar coating. In my own city, when a step toward pay-as-you-go was proposed last year,—a very mild step which would merely have ended the practice of turning an annual operating deficit into a long-term obligation,—the civic organizations, such as the Chamber of Commerce, the real estate groups, and the newspapers, raised a tremendous clamor, which resulted in the City Council's continuing a policy of deficit financing.

Pittsburgh Points the Way to Tax Reform

We should levy special assessments on non-abutting properties benefited by improvements.

And we should shift the burden of tax payments as far as possible from the homeowner to the land speculator.

I hope you will pardon a small brag at this point. The 1939 Municipal Year Book, utilizing figures derived from the Detroit Bureau of Governmental Research, shows that an average urban family, a family of four, living in a $5,500 home, earning $2,500 a year, pays a lower amount of direct taxes annually in Pittsburgh than in any other city of more than 500,000 population in the United States.

The chief reason for this happy condition is the fact that Pittsburgh does not tax personal property, and that the tax on land values is twice as great as the tax on improvement values. In other words, we tax the dwellings at one-half the rate we tax the lot. Since most small homes are built on inexpensive lots, this represents a very real saving to the homeowner.

The Pittsburgh graded tax system puts a premium on the improvement of land and puts a penalty on land held in idleness, since a value in idle land pays twice as much in city taxes as an equivalent value in improvement.

We believe that the graded tax has worked well in Pittsburgh, and I commend it to your further study.

Insurance Premiums, $8,000,000; Fire Losses $850,000

As mayors, we can also indirectly relieve the tax burden on the people of our cities by attacking consumer problems which annually cost our citizens far more than the amounts

(*Continued on page* 113)

Water Rates and Service Charges

1939—Part IV

Covering Domestic and Industrial Meter Rates, Discounts and Penalties, Installation Charges, Fire Hydrant Rentals and Fire Sprinkler Costs

Ontario, Calif.

Present population	15,000
Population served	15,000
Number of active services	3,839
" " meters	4,117
" " hydrants	535
Miles of water main	91

The following water rates have been established for water supplied by the city of Ontario within its corporate limits:

First 700 cu. ft. or fraction per month	$1.30	
Each additional 100 cu. ft. per month up to 5,000 cu. ft.	.10 per	100 cu. ft.
Each additional 1,000 cu. ft. per month in excess of 5,000 cu. ft.	.77 "	1,000 " "

All water consumers are entitled to a 15% discount on water bills if paid not later than the 15th of the following month. Services are cut off when the bill is not paid after the discount time limit, and water is not turned on again until after a turn-on charge of 75c has been paid in addition to the payment of all arrears and a deposit for the purpose of guaranteeing payment of future bills.

The Water Department makes a perpetual maintenance charge on all services, meters and meter boxes installed, as follows:

Size of Service	Service and Meter
⅝" and ¾"	$25.00
1"	50.00
1½"	75.00
2"	100.00

For all water furnished outside the limits of the city, the rates are:

First 700 cu. ft. or fraction thereof	$2 per	month
Each additional 100 cu. ft. up to 5,000 cu. ft.	.13 "	"
Each additional 1,000 cu. ft. in excess of 5,000 cu. ft.	1.00 "	"

No additional consumers outside the city limits have been connected since December 13, 1937, in accordance with the requirements of Ordinance No. 617.

A consumer who believes his meter inaccurate may have it tested by making a deposit of $1.00. If the test shows the meter to be inaccurate by more than 3%, the fee is refunded and the current water bill adjusted in accordance with the result of the test.

Applications for service are made through the Water Superintendent and a deposit of $2.60 made, which is applied to the payment of any delinquent bills. All services and water meters installed by the Water Department remain the property of the city, but are installed at the cost of the consumer. All maintenance, repairs and renewals are made by the city, except that the expense may be charged to the consumer if it was caused by negligence or carelessness on his part.

HELEN M. SCHALLOWITZ,
Bookkeeper, Water Department.

Washington, Mo.

Present population	6,000
Population served	5,500
Number of active services	1,235
" " meters	1,235
" " hydrants	135
Miles of water main	20

The water bills of the Washington Water Works show the number of cu. ft. consumed, but the rates are for 1,000-gal. units. The rates are as follows:

First	2,000 gals. or fraction thereof	$ .80	
		Per 1,000 Gals.	
Next	5,000 " " " "	.36	
"	10,000 " " " "	.33	
"	25,000 " " " "	.27	
"	50,000 " " " "	.20	
"	100,000 " " " "	.16	
"	500,000 " " " "	.13	
"	1,000,000 " " " "	.10	
All in excess of 1,692,000 gals.		.09	

All public fire hydrants are free, and water is furnished free to all city buildings.

The consumer must furnish and maintain the service from the city main and also furnish the water meter. The service from the main to the meter must be constructed of copper pipe.

J. W. RENNICK, JR.,
Superintendent of Water Works.

Whitefish Bay, Wis.

Present population	8,850
Population served	8,850
Number of active services	2,287
" " meters	2,287
" " hydrants	416
Miles of water main	34.6

Water accounts are billed quarterly at the rate of 11c per 100 cu. ft., regardless of the quantity used. There is a service charge of 50c per meter per quarter. A penalty of $1.00 is collected on all water bills of less than $5.00 if not paid by the 20th of the month due, and a 20% penalty is imposed on all delinquent bills in excess of $5.00.

Meters are owned by the property served, and repairs are made by the village and charged to the owner. The ownership and responsibility for repair of service pipe from the main to the house is vested in the property owner.

Whitefish Bay purchases its water from the city of Milwaukee and maintains its own distribution system. The purchased water is then resold for local consumption. There is a charge of $2.00 per capita for public fire hydrants, and no charge for private fire connections for sprinkler service, except for water used through the meter on the service line.

RALPH H. CAHILL,
Village Commissioner.

Tulsa, Okla.

Present population	155,000
Population served	165,000
Number of active services	29,800
" " meters	29,800
" " hydrants	1,313
Miles of water main	393

The monthly water rates for water supply through meters to all places within and outside the corporate limits of the city of Tulsa are:

First	15,000 gals.	$ .35	per 1,000 gals.
Next	22,000 "	.30	" " "
"	38,000 "	.25	" " "
"	75,000 "	.15	" " "
"	3850,000 "	.10	" " "
"	6000,000 "	.09	" " "
Excess		.07	" " "

Consumers not living within the corporate limits of the city, whose consumption is less than 250,000 gals. per month, must pay a rate of 50% higher than those shown in the table above, the monthly charge for less than 250,000 gals. not exceeding $42.60 per month. Consumers having an auxiliary water supply and using in excess of 10,000,000 gals. per month during the nine months of each year from September through May inclusive, pay 5c per 1,000 gals. provided that the consumer agrees to limit the usage of water to a maximum of 350,000 gals. per day in the event that there is a shortage of water or a major conflagration within the city or a major break in the

city mains. This off-peak rate does not apply to accounts where the water is purchased for re-sale.

The minimum monthly charge for all metered water service, based on the size of the meter, is:

Meters ¾"	$ .75
" 1"	1.25
" 1½"	1.75
" 2"	2.50
" 3"	5.00
" 4"	8.00
" 6"	15.00
over 6"	25.00

Persons desiring to use water from the water-supply system of the city of Tulsa make an application and sign a contract for such service. If the applicant is not the owner of the property to be served, he must make a reasonable deposit to guarantee payment. The amount is fixed by the Chief Clerk of the Water Department, on the basis of the estimated water bill for 45-day service for the particular premises. In no case is the deposit less than $5.00. The deposit is refunded to the applicant when the service is discontinued and all water bills have been paid.

There is no charge for the city fire hydrants, for public fire hydrants, or for connections for sprinkler installations for fire protection.

W. F. McMURRY,
Superintendent, Water Department.

Scottsbluff, Nebr.

Present population	10,000
Population served	Unknown
Number of active services	1,850
" " meters	1,835
" " hydrants	148
Miles of water main	25

The monthly water rates in Scottsbluff were made effective June 1, 1937, and a special discount made effective one year later. The standard rates are:

6,000 gals.	21⅔¢ per 1,000 gals*
Over 6,000	12½¢ " " "
Minimum gross charge	$1.30 per month
Minimum net charge	1.00 " "

The discounts effective June 1, 1938, are 5¢ per 1,000 gals. discount on the first 6,000 gals., 7½¢ per 1,000 gals. discount on all water used over 6,000 gals. on bills issued on the first of July, August, September and October if paid on or before the 10th of the month. All accounts are due on the first day of each month. If not paid by the 15th, service is discontinued until all charges are paid plus a penalty of $1.00 for renewing the service. Water rents delinquent more than 90 days are certified to the County Clerk and are placed on the tax rolls and collected as other city taxes against real property.

The Water Department makes all meter repairs without cost to the owner of the property, except where the damage is caused by freezing or hot water. All services are installed by licensed plumbers and paid for by the property owner and repaired by the property owner when necessary. The owner makes a deposit of $15 on a city-owned ⅝" x ¾" meter when the application is granted. Larger meters are charged in proportion. The deposit is refunded when the property is sold, and the new owner is required to make a new deposit.

There is no charge made for public fire hydrants, nor is there any charge for fire sprinkler service.

W. E. HARPER,
Water Commissioner.

Stevens Point, Wis.

Present population	14,000
Population served	12,500
Number of active services	3,150
" " meters	3,150
" " hydrants	295
Miles of water main	38

The water rates of Stevens Point as arranged by the Public Service Commission of Wisconsin, are payable quarterly and are as follows:

First 1,000 cu. ft. (equivalent to 7,500 gals.) used per quarter—the minimum charge for each size meter		
Next 3,000 cu. ft. used per quarter	$ .16	net per 100 cu. ft.
Next 6,000 cu. ft. used per quarter	.12	" " " " " "
Next 40,000 cu. ft. used per quarter	.035	" " " " " "
Next 150,000 cu. ft. used per quarter	.04	" " " " " "
Next 300,000 cu. ft. used per quarter	.035	" " " " " "
All over 500,000 cu. ft. used per quarter	.03	" " " " " "

The above charges apply separately to each meter. The minimum charges per quarter with one customer to a meter are shown below, but for each additional customer on the same meter a service charge of 25¢ is added:

⅝" and ¾" meters	$ 2.25
1", 1¼", 1½" "	2.50
2" meters	3.00
3" "	4.50
4" "	6.25
6" "	11.25

Meters are furnished and placed solely by the water utility. Bills not fully paid within a half-month of their regular date of issue are increased 10% in accordance with the rulings of the state authority. Then when bills are unpaid five days following this increase, the water is shut off and a charge of $1.00 is made for restoring the service. To temporarily relieve property owners of the responsibility for the payment of water bills of tenants, the tenants, upon agreement with the owner, may make a minimum cash deposit of $10 to secure payment for water service. This deposit earns interest from the utility at the rate of 6% per year up to the time that the service ceases, provided the deposit is in the utility's possession for not less than six months.

The following is quoted from the rulings of the City Water Department: "In case a testing of meter is demanded by a water consumer, the test will be made free of charge provided that the consumer is personally present and carefully observes the test, and provided also that it is not less than one year since the meter was previously tested. All of the numerous meter tests ever made by the utility have always demonstrated that there is never such a thing as a meter over-registering."

Upon receipt of an application for water service, the applicant assumes the obligation for paying for the service, which is installed by the water utility up to within a reasonable approach to the border of the applicant's property. If this charge is not paid promptly, the charge and interest are included in the city taxes on the property.

Charges for public fire protection are billed to the city Police and Fire Commission annually at the rate of $1.50 per capita. In addition to this, a charge of $13.00 per annum is made for each new hydrant installed, plus a charge of 6c per lineal foot for all new water main added to the system each year.

Charges for private fire protection service vary in accordance with the size of the connection to the water system. The amount of space protected and the character of the building to which service is supplied are disregarded. The rates below are annual rates payable quarterly in advance:

2" service	$25.00	net minimum
2½" "	30.00	" "
3" "	36.00	" "
4" "	50.00	" "
6" "	75.00	" "
8" "	100.00	" "

VERNE A. SOMERS,
Superintendent, City Water Department.

Sacramento, Calif.

Present population	118,808
Population served	118,808
Number of active services	29,828
Number of meters	248
" " hydrants	1,666
Miles of water main	247.15

The meter rates for water consumed for commercial purposes are:

First 10,000 cu. ft.	$ .09	per 100 cu. ft.
Next 24,000 " "	.075	" " " "
" 36,000 " "	.045	" " " "
Over 70,000 " "	.03	" " " "

Domestic services are still on a flat rate basis, according to the number of rooms in a house.

The minimum monthly charges for various sizes of metered connections, and the quantity of water the consumer is entitled to each month without additional payment, are as follows:

Connection Size Inches	Quantity of Water Consumer Is Entitled to Each Month Without Additional Payment Cubic Feet	Gallons	Monthly Minimum Charge
½	1,100	8,000	$1.00
¾	1,700	12,000	1.50
1	2,800	21,000	2.50
1½	5,000	37,000	4.50
2	7,800	58,000	7.00
2½	12,700	95,000	11.00
3	16,000	120,000	13.50
4	28,000	209,000	22.50
6	76,000	569,000	45.00
8	342,700	2,563,000	125.00
10	509,300	3,810,000	175.00
12	592,700	4,433,000	200.00
16	1,426,000	10,667,000	450.00

Applications for service are made to the Division of Water, which installs the tap and service to the property line only.

When water is shut off for failure to pay a bill or for infraction of the city ordinances, it is not turned on again until all arrears are paid plus a charge of not less than $5.00 for shutting off and turning on the water, provided that in case of poverty, the City Council by vote may remit the additional assessment.

Lines for private fire protection must have no tap or other connection, and where city water is not otherwise used, a charge of 20% of the regular rate for such premises is made, provided that the

minimum charge for this emergency service is not less than $2.50 per month. The minimum charge for an untapped connection for automatic fire-extinguishing devices is 50c per month per inch diameter of pipe measured at the connection with the city main.

No charge is made for city fire hydrants.

J. C. JENNINGS,
Engineer, Division of Water.

Hyattsville, Md.

Present population	90,000
Population served	85,000
Number of active services	21,150
" " meters	21,045
" " hydrants	3,600
Miles of water main	400

This report is for the Washington Suburban Sanitary District, the office of which is located at Hyattsville. A special schedule of charges for water-main and sewer construction is made by this Sanitary District, based on a front-foot benefit charge which is assessed against properties abutting the water main or sewer. The schedule of charges is as follows:

Property Classification		Yearly Charge per Front Foot Water	Sewer
Business	First 200 ft.	$ .20	$ .20
	Excess of 200 ft.	.14	.14
Subdivision	First 150 ft.	.14	.14
	Excess of 150 ft.	.07	.07
Small Acreage	First 150 ft.	.14	.14
	Second 150 ft.	.07	.07
	Excess of 300 ft.	.04	.04

In addition to these charges, to cover part of the cost of reservoirs, pumping plants, purification and treatment works, main feeders and collectors, etc., and also similar main features of the sewerage system, there is a property tax of 7c per $100 laid against all property within the Sanitary District. As the 7c property tax does not entirely cover the cost of constructing the main elements in the water system, additional bond issues for this purpose are carried by receipts from the water consumption charge.

The following water rates are charged to cover the expense of maintaining and operating the water and sewer systems complete, and part of the construction cost of major parts of the water system. There is no separate sewer maintenance charge, as this expense is covered by the water consumption charge as follows:

First	50,000 gals.	semi-ann.	$ .22 per 1,000 gals.
Next	550,000 "	"	.20 " " "
"	500,000 "	monthly	.15 " " "
"	1,950,000 "	"	.13 " " "
All over	2,500,000 gals.	monthly	.10 " " "

The following service charges are made, which do not include the delivery of any water free, but are in addition to the regular water consumption charges above:

⅝" meter	$ 2.00	2" meter	$ 22.00
¾" "	5.00	3" "	50.00
1" "	8.00	4" "	74.00
1¼" "	12.00	6" "	150.00
1½" "	15.00	8" "	300.00

The Commission constructs house connections from the main to the front property line, including the installation of the meter, for which the following charges are made:

Water		Sewer	
¾"	$42.50	4" C. I. or 6" T. C.	$42.50
1"	50.00	Connections larger than 6" at cost, but in no case less than	42.50
1¼"	60.00		
1½"	72.00		
2"	90.00		
Connections larger than 2" at cost, but in no case less than	90.00		

The construction of the house connection between the property line and the building, as well as the inside plumbing installation, must be done by a registered master plumber engaged by the property owner. This work is inspected by a representative of the Commission, for which an inspection charge of $2.00 is made for each kind of service, and $5.00 for the plumbing installed inside the building.

There is no charge for fire hydrants in the municipalities served by the District, nor for connections for sprinkler systems for private fire protection. Private fire protection systems are provided with detector meters and pay the regular service charge, based on the size of the meter, together with the consumption charge for any water used.

NOBLE L. OWINGS,
Assistant to Chief Engineer,
Washington Suburban Sanitary District.

Alpena, Mich.

Present population	12,166
Population served	12,166
Number of active services	3,500
" " meters	3,000
" " hydrants	247
Miles of water main	43.7

Water rates are payable quarterly at the water office in City Hall, the quarters beginning on the 1st days of January, April, July and October. The water rates are:

Average Consumption per Quarter	Per 1,000 Gals.
100 to 10,000 gals. per quarter	minimum rate
10,000 to 50,000 " " "	$ .24
50,000 to 100,000 " " "	.21
100,000 to 200,000 " " "	.18
200,000 gals. and over	.12

The minimum rate where meters are installed is $2.25 per quarter, or $9.00 per year, whether water is used or not.

A charge of $2.00 per year is made for the care of all meters owned by the city. Meters are purchased by the consumers or property owners from the city and installed at their expense, and thereafter remain the property of the purchaser. The city purchases meters in large quantities from manufacturers and sells them at actual cost to the consumers, the title to the meter remaining in the name of the city until the purchase price is paid by the consumer, which may be in quarterly installments of not less than 50c each, with 5% annual interest added.

An application being made for water service, the city taps the main and makes the necessary connection. The size of tap and service is determined at the time of making application for the permit for the installation of the service pipe. An advance payment of the estimated cost must be made to the city by the applicant for tapping the water main. The portion of the water service pipe from the water main to the street line must be extra-strong, lead pipe if under 4 inches in size, and if over 4 inches it must be of standard-weight cast iron pipe.

When a water service pipe is laid to premises to supply fire hydrants, automatic sprinklers or other fixtures for fire protection, a valve must be placed on the connection. This valve is closed and sealed, and when the seal is broken to permit the use of the service for fire, the Water Office must be notified within 24 hours. A sealed valve is not required when an approved indicator check or fire-service meter is installed.

A. M. HOPPERSTEAD,
City Manager.

Sault Ste. Marie, Mich.

Present population	16,336
Population served	15,000
Number of active services	3,500
" " meters	1,000
" " hydrants	475
Miles of water main	70

Water bills are payable quarterly during the months of January, April, July and October, for the preceding quarter. If not paid within 30 days after due, water is shut off without further notice and is not turned on again until all arrears are paid and in addition the sum of $1.00 for turning on the water. The water rates are:

First 10,000 cu. ft. per quarter	$ .09 per 100 cu. ft.
Over 10,000 cu. ft. and under 100,000 per quarter	.07 " " " "
Over 100,000 cu. ft. and under 300,000 per quarter	.05 " " " "
Over 300,000 cu. ft. per quarter	.01 " " " "

There is a service and meter charge made per year, as follows:

Service with	⅝"	meter	$ 6.00
" "	¾"	"	9.00
" "	1"	"	12.00
" "	1½"	"	18.00
" "	2"	"	30.00
" "	3"	"	60.00
" "	4"	"	90.00
" "	6"	"	180.00

The City Manager reserves the right to determine the size of meter required for any service. In any case where a large service is required for possible fire protection, the Commission may grant permission to the consumer to purchase and own the meter. In such a case, the consumer must bear all expense in connection with repairs or replacement and must pay to the city, in addition to the cost of water used, the following fixed charge per year:

2" meter	$22.00
3" "	44.00
4" "	62.00
6" "	124.00

Applications for connections to the water system are made at the office of the City Clerk accompanied by a tapping fee of $10. The City Clerk then has suitable service pipes laid from the water main to and including the curb cock, which is located between the curb line and the sidewalk line and is provided with a suitable service box. The work of furnishing

and laying the pipe up to and including the curb cock is done at the expense of the city. The applicant must furnish and lay the balance of the service pipe at his own expense, subject to the supervision and direction of the City Manager.

RALPH E. SPEER,
City Engineer.

Wichita Falls, Texas

Present population	50,000
Population served	52,500
Number of active services	9,760
" " meters	9,760
" " hydrants	452
Miles of water main	98.08

The winter and summer water rates by meter in Wichita Falls are as follows:

Per Month		Per 1,000 Gals. Winter	Summer
Minimum	4,000 gals. or less	$.25	$.25
Next	6,000 " "	.23	.18
"	20,000 " "	.22	.18
"	20,000 " "	.21	.18
"	50,000 " "	.20	.18
"	50,000 " "	.19	.18
"	150,000 " "	.18	.18
"	200,000 " "	.17	.17
"	250,000 " "	.16	.16
"	250,000 " "	.15	.15
Balance		.13	.13

Upon application being made by a consumer, the city makes the following tapping charges:

	Meters	In Dirt	Under Pavement
¾"	Furnished	$15.00	$22.50
1"	"	21.00	32.50
1½"	Customer buys	40.00	Cost
2"	" "	50.00	"
All over 2"	" "	"	"
Fire-line taps	Not metered	"	"

Customers outside city limits pay a service charge of 50c per month in addition to the regular meter rates.

There is no charge for fire hydrants or for sprinkler connections for fire protection within the city, but fire hydrants outside city limits are billed at $5.00 per month per hydrant.

G. M. NORRIS,
Superintendent, Wichita Falls Water Department.

Porterville, Calif.

Present population	5,300
Population served	Unknown
Number of active services	1,600
" " meters	1,600
" " hydrants	125
Miles of water main	Unknown

Bills for water service are rendered the 1st of each month, and if not paid on the 10th may become delinquent and 20% is added to the bill as a penalty. Bills not paid on the 15th of the month are listed for shut-offs, and an additional demand for payment made on the delinquent consumer. If payment is not made, the water is shut off and a charge of $1.00 made in addition to the bill, which must be paid before service is turned on again. A consumer who fails to pay his water bills and whose service has been discontinued is required to re-establish credit by making a cash deposit of twice the estimated average periodic bill for his service. Water measured through meters carries a minimum charge, depending on the size of the meter, which permits the use of 1,000 cu. ft. without additional charge. These minimum charges are:

Less than 1"	$ 1.00
1"	1.20
1¼"	1.35
1½"	1.50
2"	1.80
3"	2.85
4", and up	3.20

All water used in excess of the first 1,000 cu. ft., and not exceeding 2,000 cu. ft., is billed at 65c per 1,000 cu. ft. Water used in addition to this is billed at 50c per 1,000 cu. ft.

According to Ordinance 286, passed May 21, 1931, no further outside consumers were accepted, but those already connected to the city mains were permitted to continue paying twice the established charges for consumers within the city.

A consumer believing his meter to be out of order may request a test in writing, accompanied by a deposit of $1.00. The Water Department is then required to examine and test the meter for accuracy. If the meter registers over 3% more water than actually passes through it, the deposit is returned and another meter substituted for it and the water bill adjusted. If the meter is accurate within 3%, the city retains the deposit.

Consumers are required to file an application for water service and pay in advance the following rates for taps and service and meter where a water main passes along the street or alley adjoining the applicant's property:

All services of a size less than 1"	$12.50
" " " " " 1"	20.00
" " " " " 1¼"	27.50
" " " " " 1½"	35.00
" " " " " 2"	45.00

The city is not required to install a meter larger than 2" for any of the service charges, but a meter of larger size with service as required is installed by special agreement at the actual cost to the consumer exclusive of the cost of the meter.

D. G. SPELLMAN,
Superintendent of Public Works.

Salem, Ore.

Present population	32,000
Population served	33,000
Number of active services	7,600
" " meters	7,500
" " hydrants	284
Miles of water main	105

For the purpose of making charges, all meters on services in Salem are considered separately and the readings are not combined except where the Commission, for operating convenience, elects to install two or more meters instead of one at a central location to serve the customer's premises; then the readings of the two or more meters are combined for the purpose of making charges. Further, if a customer desires a change in meter size, a flat charge of $1.00 is made for any change in meter up to and including 1½" in size, and the cost of labor and material plus 10% is charged for each change of meters above 1½" in size. Following are the meter rates charged inside the city:

Monthly Rates for Metered Services		Per 100 Cu. Ft.
First	200 cu. ft.	$ .40
Next	300 " "	.25
"	1,500 " "	.15
"	14,000 " "	.12
"	20,000 " "	.075
All over	36,000 " "	.05

A commodity rate, or irrigation rate, applicable during the irrigation season from the May meter reading to the September meter reading, is allowed to customers using water for domestic and/or irrigation purposes through one service, except apartment houses, residential courts, boarding houses, residences housing more than one family, public or semi-public buildings, commercial establishments, water districts, etc. These exceptions are entitled to the rate of 5c per 100 cu. ft. for only the excess over the normal monthly consumption, which is determined by taking the average consumption of water for the eight preceding non-irrigation months. The special irrigation rates for other services are:

First	200 cu. ft.	$ .40 per 100 cu. ft.
Next	300 " "	.25 " " " "
All over	500 " "	.05 " " " "

If a consumer desires special service for irrigation only, this service is metered, and the minimum meter charge given below is made for a minimum period of five months:

Size of Service	Size of Meter	Minimum Charge
The size of the service pipe shall equal or exceed the size of the meter	¾"	$ 1.20 monthly
	1"	2.60 "
	1½"	3.90 "
	2"	7.00 "
	3"	12.00 "
	4"	19.00 "
	6"	38.00 "
	8"	61.00 "

The meter rates outside the city are:

Monthly Rates for Metered Services		Per 100 Cu. Ft.
First	200 cu. ft.	$ .50
Next	300 " "	.31
"	1,500 " "	.19
"	14,000 " "	.15
"	20,000 " "	.09
All over	36,000 " "	.06

Similarly, irrigation rates are charged, the buildings included in the exceptions being billed at 6c per 100 cu. ft., and all others at the following rates:

First	200 cu. ft.	$ .50 per 100 cu. ft.
Next	300 " "	.31 " " " "
All over	500 " "	.06 " " " "

The special irrigation service rates carry the following minimum charges outside the city:

Monthly Rates for Metered Service

Size of Service	Size of Meter	Minimum Charge
The size of the service pipe shall equal or exceed the size of the meter	¾"	$ 1.50
	1"	3.25
	1½"	4.90
	2"	8.75
	3"	15.00
	4"	23.75
	6"	47.50
	8"	76.25

The Water Commission will test any consumer's meter on written request and makes adjustments for wrong charges for a period not to exceed three months if the

meter over-registers. When a consumer requests a meter test within one year after the date of installation of the meter, or more often than once in one year thereafter, a desopit of $2.00 is required to cover the cost of the test. The amount so deposited is returned to the customer if the meter is found to over-register more than 2% under conditions of normal operation.

The Commission requires each prospective customer to sign an application for water service, giving the name of the applicant, location of the premises, and the address to which bills shall be mailed and delivered. This application is considered a written request for service and does not in itself bind the Commission to serve. The credit of the applicant for water must be established by making a cash deposit to secure payment of bills for service, except that in case the customer has otherwise established his credit for water service, the cash deposit may be waived. An applicant who has been a water consumer and whose service has been discontinued for failure to pay his water bills, may be required to re-establish his credit by making the required cash deposit before re-connection of the service is made

On and after April 15, 1938, the services to premises previously not served within the city are installed under the following conditions: for a ¾″ service line with ⅝″ by ¾″ meter, or a 1″ service line with a 1″ meter, for one residence or one household, no charge is made for the installation, but an advance deposit of $10 for ¾″ service and $15 for a 1″ service is required at the time of making application. This amount is credited against bills rendered for water service within a period of one year. For all service installations other than these, regardless of size or classification, a charge of actual cost of labor and materials, exclusive of the meter, plus 10% for overhead, is made, and an advance deposit of the estimated cost is required.

New service lines outside the city on or after April 15, 1938, are installed only by the Commission, under the following charges:

Size of Pipe	Unpaved Street	Paved Street	Cost of Each Additional Foot in Excess of 30 Ft. from Center of Street
¾″	$15.00	$20.00	$0.25
1″	20.00	25.00	0.30
1¼″	25.00	35.00	0.40
1½″	30.00	50.00	0.50

These charges are payable in advance and are adjusted to equalize charges against property on opposite sides of the street by assuming the main to be located in the middle of the street. For pipe sizes larger than 1½″ the actual cost of labor and materials, exclusive of the meter, plus 10% overhead, is charged.

The Water Commission receives no remuneration from the City Council for fire hydrant service. The flat rate for automatic sprinkler systems with fire hydrants and standpipes in conjunction for fire protection is:

Size of Service	Minimum Charges
2″ or less	$2.00 per month
3″	3.00 " "
4″	4.00 " "
6″	6.00 " "
8″	8.00 " "

For private fire hydrants, standpipes, and automatic sprinkler systems for fire protection, these rates apply, provided water under this schedule is used only for extinguishing fires and the flushing necessary for the proper maintenance of fire protection equipment. A meter is installed to protect the city against surreptitious use of water, and in such cases the monthly minimum charge is made in accordance with the size of meter installed. The flat rates for fire protection services outside of the city are:

Size of Service	Minimum Charges
2″ or less	$2.50 per month
3″	3.75 " "
4″	5.00 " "
6″	7.50 " "
8″	10.00 " "

C. VAN PATTEN,
Manager, Salem Water Department.

Nyack, N. Y.

Present population	5,300
Population served	10,000
Number of active services	2,500
" " meters	2,500
" " hydrants	172
Miles of water main	.....

A fixed service charge is made to each consumer, based upon the size of the meter used and allowing the use of a set maximum quantity of water without extra charge, as follows:

⅝″	meter,	1,250	cu. ft. per quarter	$3.75	minimum
1″	"	1,875	" " "	5.00	"
1½″	"	3,125	" " "	7.50	"
2″	"	5,750	" " "	12.50	"
2½″	"	7,625	" " "	16.25	"
3″	"	10,250	" " "	21.25	"

Water used in excess of the minimum is charged as follows:

That portion of the first 10,000 cu. ft. per quarter which is in excess of quantity allowed under minimum charge	$2.00	per 1,000 cu. ft.
Next 90,000 cu. ft. or less	1.60	" " "
" 150,000 " " " "	1.15	" " " "
All over 250,000 cu. ft. per quarter	.70	" " "

Bills for all services are payable quarterly and are due at the time of the meter readings. A charge of 10% is added if the bill is not paid on or before the 15th of the month following the billing date.

The meters belong to the property owners, who purchase and install them. Repairs or adjustments are made only in the Water Department's shop at cost of materials only. Services in accordance with state law are laid and maintained by the property owners, copper tubing being required from the main to the meter. The Department charges $14 for ⅝″ taps for ¾″ connections; $21 for a 1″ tap, which includes the tap, corporation cock, curb cock and curb box. Larger taps are provided at labor and material cost.

No rebate is allowed on the water bill for an unoccupied house, unless a notice of non-occupancy is given to the Water Department in writing before the beginning of a new quarter. In this case water is shut off at the curb for a fee of $1.00. Before water is restored, a fee of $1.00 is charged.

All services are metered except hydrants and fire-line connections. There are 80 hydrants in Nyack for which no charge is made to the village, 41 hydrants in South Nyack, 27 hydrants in Upper Nyack and 12 hydrants in Central Nyack. Hydrants installed outside the village of Nyack are billed at $11.25 per quarter each. There is no charge for flushing or other use, but permission must be obtained from the Superintendent of Water Works prior to such use. Private hydrants located inside properties are billed at $6.25 quarterly. There are twelve such hydrants in use. Private fire lines or sprinkler connections for fire protection under pressure are billed at $25 per year per connection. No other service may be drawn from such lines. There are eight such lines in use, including one to a foam-generator in an oil tank yard.

LEROY GATES,
Secretary, Board of Water Commissioners.

Water Rates Published

March, 1939

Newport, R. I.	83
Little Rock, Ark.	83
New Brunswick, N. J.	83
Bowling Green, Ky.	85
Norfolk, Va.	85
Muskegon Heights, Mich.	85
Fort Collins, Colo.	87
East Detroit, Mich.	87

April, 1939

York, Nebr.	83
Baraboo, Wis.	83
Shenandoah, Iowa	83
Asheboro, N. C.	83
Media, Pa., Borough of	85
Millville, N. J.	85
Madison, Wis.	85
Plant City, Fla.	87
Fort Dodge, Iowa	87
Princeton, W. Va.	87
Caldwell, N. J., Borough of	87

May, 1939

The Dalles, Ore.	85
Concordia, Kans.	85
Oxnard, Calif.	85
Lower Miami and Claypool, Ariz.	87
Hammonton, N. J.	87
Boonville, Mo.	87
Menominee, Mich.	89
Jeffersonville, Ind.	89
Borger, Texas	89

June, 1939

Ontario, Calif.	93
Washington, Mo.	93
Whitefish Bay, Wis.	93
Tulsa, Okla.	93
Scottsbluff, Nebr.	94
Stevens Point, Wis.	94
Sacramento, Calif.	94
Hyattsville, Md.	95
Alpena, Mich.	95
Sault Ste. Marie, Mich.	95
Wichita Falls, Texas	96
Porterville, Calif.	96
Salem, Ore.	96
Nyack, N. Y.	97

MODEL ANTI-SPOILS LAW

A model civil service law to keep the spoils system out of state governments has been agreed on by the National Civil Service Reform League and the National Municipal League, with the Civil Service Assembly of the United States and Canada cooperating in the drafting. The model bill prescribes a layman civil service commission plus a professional director of the personnel organization. Politicians are ruled out, and also the practice of "starving" personnel agencies by withholding funds.

Weeds Are Plowed Under by City When Owners Fail to Remove Fire Hazard

Cleaning Vacant Lots and Streets in Pasadena, Calif.

GRASS fires are a menace everywhere each spring when tall weeds and dead grass burn like tinder in a strong breeze. Ordinance No. 3197 of the city of Pasadena requires that lot owners clear all weeds from vacant property, including parking and sidewalk areas, as a health measure and because of the potential fire hazard to adjacent property, trees and shrubs.

If lots are not cleared by the middle of April, the property is posted and a post-card notice is sent to each owner giving him ten days in which to clear his lot. At the expiration of that time the lots not cleared are plowed under and the owner is billed for the work.

The equipment for getting weeds out of the way is novel and effective. There are two units used for this work. One powered by a Caterpillar D2 diesel tractor coupled to a 6-foot double disk harrow with 22-inch disks is carried from place to place by a 20-foot trailer, mounted on a pair of 10.5 x 20 12-ply tires, one unit towed by a Case and the other by a Centaur tractor. Thus one man handles the entire unit. He drives the tractor towing the plowing outfit, and when he reaches the lot to be plowed under, he backs the trailer over the sidewalk, and the over-hang makes it possible for the disks to be pulled off without touching the sidewalk. When the street is narrow, so that the long trailer would constitute a hazard to traffic, it is parked along the curb after the disk harrow has been removed.

FILE NO..... **CITY OF PASADENA** DATE.....
ENGINEERING-STREET DEPARTMENT

To the owner of Lot.....

.....

.....

YOU ARE HEREBY NOTIFIED TO CLEAN said lot and the street, parking and sidewalk abutting said lot, of weeds, rubbish and other material, **WITHIN TEN DAYS FROM DATE HEREOF.**

UNLESS THESE PREMISES ARE CLEANED WITHIN THE TEN DAYS AS REQUIRED BY LAW, THE CITY WILL DO SO AT A COST TO THE OWNER OF:

THE EARLY REMOVAL OF WEEDS WHICH ARE A HEALTH MENACE AND A POTENTIAL FIRE HAZARD IS DESIRABLE. SINCE THEIR REMOVAL BY THE CUSTOMARY BURNING METHOD IS NOW PROHIBITED, AND THEIR REMOVAL BY PLOWING OR SOME SIMILAR METHOD IS NECESSARY.

See Ordinance No. 3197 for further particulars.

NO EXTENSION OF TIME CAN BE GRANTED

Respectfully, HARVEY W. HINCKS,
City Engineer and Superintendent of Streets.
Room 211, City Hall, Pasadena, Calif.

2600 3-11-38

The Official Post-Card Notice to Owners to Clean Weeds from Lots

Another Vacant Lot in Pasadena Almost Cleared of Weeds by the City's Tractor and Disk Plow. Colorado Street Bridge in the Background

Assessments for Cleaning Lots

The greater part of the cost of the cleaning of lots is really in the hand mowing of the park strip between the sidewalk and the curb. During the last fiscal year it was necessary to mail notices to 4,071 lot owners, but 3,074 of these lots were cleaned by the owners before the city reached them, leaving only 997 which were plowed under as described. The average assessment for the cleaning is $3 for a 50 x 150-foot lot. The total assessments on lots cleaned by the city was $9,922.54.

The old method of handling the cleaning of the lots was to hoe the weeds and then burn them, but even under the control of the city forces there was considerable damage to trees and shrubs, and the fire hazard to property was always present. Now no burning of weeds is permitted by anyone. The city feels, moreover, that the blacked

Motor Pick-up Sweeper Cleaning on Orange Grove Avenue, Pasadena

areas where they had been burned over were unsightly and did not add to the attractiveness of the entire community.

Street Cleaning for Sightliness

To maintain the streets of the city in a cleanly condition, Pasadena has two Elgin pick-up sweepers and two Austin pick-up sweepers. As there are only 12 miles of unpaved streets in the entire city of the total 260 miles, the magnitude of the cleaning problem may be understood.

The entire city is divided into districts, which are swept twice a week in the residential area and daily in the business section. There are a few outlying sections that are swept only once a week at present. The four motor sweepers are supplemented in the business district by six hand sweepers working along gutters and picking up papers between trips of the motor sweepers.

Each motor sweeper has a pick-up truck which follows it and removes the collected sweepings from the gutter as soon as the hopper of the sweeper is dumped. In this manner there is no scattering of the sweepings nor any unsightly accumulation remaining on the street for more than a few minutes.

The machines are worked double shifts of eight hours each, from 8 P.M. to 4 A.M., and 6 A.M. to 2 P.M. In 1938 a total of 39,308 curb miles was cleaned at a cost of 52.5 cents per curb mile. Street cleaning is under the direction of Harvey W. Hincks, City Engineer. C. Wellington Koiner is City Manager of the city of Pasadena, Calif.

T. R. K.—947.

An International Pick-up Truck Belonging to One of the Motor Sweeper Outfits

Programming Public Works

IN a discussion of "Some Problems of Federal Works Programming," at the National Conference on Planning in Boston last month, F. E. Schmitt, Editor of *Engineering News-Record*, pointed out that:

"Development of methods and habits of state-federal cooperation is one of the greatest needs in the field of public works. The principles on which it must rest are simple, including little beyond fair dealing, mutual respect, and consideration of the obligations and powers of both parties. To embody these principles in legislation and practice suited to the requirements of the problem involved, does not seem an impossible task once present importance and much greater future importance of state-federal works relations is recognized. Its accomplishment would have a decisive effect on the solution of some of our most pressing public works problems."

Mr. Schmitt gave an emphatic *No* as to whether public-works construction is likely to decrease. "Public works are a response to the needs and wants of the people, and as such are bound to keep pace with physical requirements, changes in living habits, and advance in the tools and methods of industry. An efficient highway transportation system, for example, has come to be as vital to industry and business as to social existence. The emergency programs of the depression years included some undertakings of the Fort Peck Dam type, but, by and large, all public works built were urgent necessities.

"Has public-works construction been overdone? By no means. It is well known that no community is able to say that its streets, sewers, fire and police facilities and schools are complete, modern and in full repair; and there are many other essential public facilities. In a nearby state extensive sewage treatment to reduce stream pollution is a rather pressing need. Refuse disposal and local flood control present important claims everywhere. The antiquated condition of thousands of small highway bridges is giving concern, and the backwardness of the grade-crossing situation is notorious. The national works picture is no better.

"With growth and obsolescence constantly calling for new facilities, it is safe to say that public-works construction will not decrease. On the contrary, substantial increase is inevitable. An annual budget of 3½ billion dollars for the entire country may be taken as the minimum to meet current wants."

Modern Garbage Disposal—

A Critical Study of the Sanitary Aspects and Costs of Refuse Disposal

By Desmond P. Tynan
William Raisch & Associates,
Consulting Engineers,
New York City

Throughout the ages, man has been confronted with the problem of disposing of his waste materials, principally those of an organic nature. Before the nomadic tribes settled down, the problem was a comparatively simple one; the accumulations were deposited outside the settlement, partly to be consumed by the ever-present dogs and other animals, the remainder consigned to whatever destructive action nature exerted. When the odors emanating from such putrescent mass became more offensive than even the early tribesmen could tolerate, it was an easy matter to shift camp to a new location.

With the advent of permanent dwellings, however, the inhabitants were no longer able to solve the problem of refuse disposal by running away, but had to devise some other means of coping with it. Many methods were resorted to, all revolving around the same idea, namely, that of removing these materials as far as possible from the populated section and keeping them out of sight. The principal methods were disposal by burial, or hog feeding, which continued until the turn of the 19th century, when the rapid growth of modern cities and the changing habits of living enforced the necessity, which, being "the mother of invention," resulted in the gradual development of the modern incinerator.

A Backward Step

For upwards of fifty years, incineration has been recognized as the one method which can guarantee complete, satisfactory, and sanitary disposal of refuse material. During this period a great deal has been done to improve the operation and efficiency of incinerator plants, and much is promised for the future. Recently, however, the city of New York has taken steps, which, if continued, will do much to nullify the progressive activities of sanitary engineers in the field of incineration, and under the guise of the "land fill," the city is planning a return to primitive methods in disposing of its refuse.

Great stress is laid on the economies accruing from this method of disposal, and upon the fact that the filling-in of lowlands with city ashes, garbage, and miscellaneous rubbish will make available for future generations additional parks, playgrounds, and recreational centers. The question as to whether such a method of land fill, however well regulated, can offer the same guarantee of sanitary disposal as that assured by incineration appears to be held as only of secondary importance. If economic considerations were the sole factor in determining the extent of a government's activities in the promotion of the health and well-being of the people, then we might as well tear out our modern plumbing systems, scrap our sewage-disposal plants, and page Chic Sales.

Land Fills

Disposal of garbage in land fills employs one of two methods. In one, the garbage to be destroyed is spread over a large area of land in thin layers and then covered with earth. In order that air, which is essential to the bacteria which cause the breakdown of the organic matter in the garbage, may be assured, the depth of the garbage should not be more than 6 inches, with a top cover, consisting of loose earth, of a maximum depth of 12 inches.

Hering and Greeley, in their book, "Collection and Disposal of Municipal Refuse," include a special report by the Ohio State Board of Health on this method of disposal, as practiced in Columbus as long ago as 1909, from which the following excerpt has been taken:

"This method may be considered as the primitive one in this state, as has been the case elsewhere. It was found to be in use in but one of the cities studied, namely, Columbus; but in a great number of municipalities throughout the state, it is the customary method of disposal. This is especially true of the smaller communities. At Columbus, this method was employed as a temporary expedient during the time elapsing between the expiration of a contract with a private company and the construction of a municipal reduction plant. . . . The material was placed in pits dug to a depth of about 2 feet, with an average width of 7 feet, and of indefinite length, and covered with a layer of from 1 to 2 feet of loose soil. Approximately 15 acres of land were used in this way each year.

"After burying, the garbage slowly undergoes decomposition, and finally occupies a layer one-fifth to one-third of its original thickness. In the spring of 1909, several holes were dug to uncover garbage, which had been buried for different periods with a view to discovering to what extent decomposition had been completed. The following was the results of the observation:

Time Buried	*Condition*
6 to 9 months	—In a very high state of putrefaction. Objectionable odor. Constituents readily distinguishable.
17 months	—In a somewhat less state of putrefaction; still readily distinguishable.
20 months	—Still decomposing and of some foul odor. Character more or less distinguishable.
30 months	—Material innocuous, resembling humus matter, and having a slight musty odor, very faintly distinguishable."

The New York City Method

The shallow-fill method of disposal is not the one advocated by New York. The reason for describing it at all is merely to avoid confusing the results so obtained, with the results obtained from the second method, that is, the so-called "sanitary fill" advocated for New York City. This method consists of excavating a trench some 30 feet in width and of varying depths, up to 12 feet, and depositing alternate layers of refuse and earth, topped off with a final covering of earth some 2 feet in thickness. The refuse is not dumped from the collection trucks directly into the

—Incineration or Burial?

trench, but is piled some 50 feet away and pushed over the edge with a bulldozer. It is claimed that the heavy bulldozing machine used for this purpose compacts the mass of refuse and earth covering to such a degree as to minimize later settlement and eliminate rats. An article describing this method in detail* states that the land-fill method is "similar to the sanitary fill scheme used in San Francisco" and to "controlled tipping" as practiced by the British.

A recent inspection, by the author, of some of the "land fills" now in operation in the borough of Queens, New York, fails to show this method in practice. Instead of systematic trenching, the conditions are found to be similar to those encountered in the old-time refuse dumps. The material from the collection trucks was either dumped on high ground at the edge of the fill and pushed ahead by the bulldozer, or deposited in a series of haphazard excavations, some over 30 feet in depth, which had been made in various locations around the fill. Some of the material from these excavations was used as a covering for the top of the refuse piles.

The result of depositing garbage in deep pits or heavy piles, as is the actual practice in Queens, and covering it over with earth or ashes, or placing it in layers in excavated trenches and covering each layer with earth, as was promised for the land-fill method, will be much the same. In both, bacterial action will be stopped, and the garbage will remain in its original state indefinitely. Hering and Greeley in the work above quoted also recount that, . . . "In Rome, garbage buried about 1,000 years ago, at a depth of from 25 to 30 feet, when examined near the end of the 19th century, had not completely decomposed."

Future Real Estate Value

Ignoring for the moment the sanitary aspects of the land fills and assuming that such fills could be sealed against odors, rats and other vermin, it is well to recognize that the land thus reclaimed can scarcely be valuable, save perhaps for parks and recreation centers. However, if the trend of population should later require the development of these areas into residential or industrial sites, whether it be five years or fifty years hence, and in the course of building operations these garbage deposits are uncovered, putrefaction will immediately set in with its attendant noxious odors spreading an invitation to the bulldozed rats to return to their natural habitat. Before any buildings could be erected, the deposited refuse would have to be entirely removed, or expensive pile foundations undertaken. Such soil is altogether unsuitable for bearing the loads superimposed by heavy structures. In addition, the problem of the final disposition of this excavated material would still remain.

The recent controversy in New York City over the use of "land fills" for the disposal of garbage and the closing-down of incinerators has focused attention on this alleged economy. The principles are discussed in this article, showing the real economies that may be effected through sanitary disposal of garbage and combustible rubbish with short hauls to modern high-temperature, nuisance-free incinerators.

Elaborate precautions are taken in all the New York land fills to prevent fire from external sources, and it is to be hoped that after the proposed work has been completed, there will be no fire hazard from spontaneous combustion, a rather vain expectation in the light of past experience. An article entitled "Preparation of the Fair Site," by Carlton S. Proctor,† describes the work necessary at the old Corona ash-dump to prepare for the World's Fair site. An excerpt from the article indicates what can be expected in the way of spontaneous combustion in the proposed land fill, where garbage and rubbish is intentionally included: "Some trouble was experienced in certain borrow-pits due to accumulations of organic matter which generated heat sufficient to occasionally cause cuts to burst into flames, and much of the material that was sent to the grading areas was smoking hot. Evidence of this heat in the ash pile was discovered during the making of soil borings when hot water was jetted to the surface in several locations." If these conditions were found in a fill where the inclusion of organic matter was the exception rather than the rule, what may be expected in the type of fill now recommended by the New York Sanitation Department?

While there is little definite information available as to the migratory habits of rats and other disease-bearing vermin, the havoc that can be brought about by these pests is too well known and too widely recognized to require description. We do know that they are usually found in locations where food is present, and that they multiply at a surprisingly rapid rate. Swamplands and natural depressions have no inherent qualities of attraction for them. The proposed filling-in of all such areas with tons of garbage will inevitably attract them to these locations. Whether they build their nests in the fill itself, or take up their abode in nearby dwellings or other buildings and use the fill as a source of food supply, is of little consequence. The fact remains that where food is, there will the rat be found, and in ever-increasing numbers as time goes on.

Much stress is placed on the merits of compressing the material in the fill in New York to prevent

(Continued on page 111)

* *Engineering News-Record*, September 1, 1938, page 270.

† *Engineering News-Record*, September 22, 1938, page 353.

Montclair, N. J., Water Bureau Has Issued Detailed Instructions for Systematic

Hydrant Inspection and Flushing

By STUART M. WEAVER
Superintendent of Water Bureau

IN keeping with current practice, employees are naturally instructed to start the inspection and flushing of fire hydrants at the source of supply and proceed downstream, flushing each hydrant until it flows clear before shutting it off. The source may be a pumping station, a larger main, or a pressure-reducing valve supply from a higher pressure area.

Inspection Procedure

Inspection and flushing are performed at night. This procedure minimizes inconvenience to the traveling public. It also reduces consumer annoyance resulting from drafts of temporarily turbid water incident to flushing operations.

When a night inspection crew is making a round of fire hydrants, a definite order of testing has been established, so that nothing will be omitted and each step will check previous steps, as follows:

(1) Hydrants are checked with an aquaphone for leaks in the hydrant or branch.

(2) The gate-valve on the branch is closed and opened, and the number of turns counted and recorded. (This important check is made less frequently than the regular inspections and by a different organization at the present time.)

(3) With the caps on, the hydrant is opened sufficiently to crack the main valve, while the drain-valve remains open, thus blowing out the drain. This is continued until water comes to the surface around the hydrant.

(4) The opening of a hydrant is continued until the drain-valve closes, which should occur within three to four complete turns, including the turns required under (3). Inspectors must report cases of delayed closure of the drain, giving the number of turns.

(5) With the nozzle caps still on and full pressure on the hydrant, the following items are checked and corrected:

(a) Leaky packing, indicated by water running from under the hydrant top, which is corrected by removing the top and tightening the packing gland-follower nuts. In many of the older hydrants it will probably be necessary to replace the packing and also to replace badly corroded and inoperative packing gland-follower bolts and nuts. These cases should be listed for the daylight repair crew;

(b) Leaks around lead-calked nozzles, which are corrected by calking unless the nozzle is loose, in which case procedure under (9) below is followed:

(c) Leaks past nozzle-cap gaskets. Careful inspection must be made, as conditions in (b) and (c) may be easily confused.

(6) The hydrant valve is closed and the caps removed so that the hydrant may be flushed, and a record is made of the time required for clear water to run. As most hydrant flushing is done at night, employees are warned not to attempt to determine when the water has become clarified, by observing the flow with a light as it is discharged from the nozzle, since anything less opaque than ink appears clear under those circumstances. A sample should be caught in a 500-cc beaker and, after it has stopped swirling, it should be carefully examined by holding it up to a steady light. The water must be clear by this test before the hydrant is turned off.

The author has developed the methods described in this article as a result of many years' experience and has found that the sequence of operations as outlined aids employees of the Water Bureau in making complete inspections of fire hydrants.

(7) The hydrant is shut off and then the water-level in the hydrant barrel is observed to see if it drops rapidly consistent with a properly functioning drain-valve. Failures are reported for correction by the day maintenance crew.

(8) Nozzle-cap gaskets which have shown leaks under test (5) are replaced.

(9) A 2½-inch round wooden lever 2 feet long is inserted into leaded-in hose nozzles and their rigidity is tested by applying about a 50-pound prying force in all directions to the end of the lever. Any evidence of looseness is reported for the daylight repair crew, who completely remove the nozzles, clean the socket, reinsert and lock the nozzle behind the lugs in the socket and repour with hot lead and then calk. Nozzles which are found loose cannot be recalked satisfactorily in the old lead. Looseness is evidence that the lead bead in the socket groove has failed, and efforts to expand this bead into the groove without first repouring to insure an intimate fit with the groove result in a partial collapse of the thin nozzle wall and an apparent tightening of the nozzle through surface expansion only. Such nozzles are likely to blow out when subjected to the combined forces of water pressure, the twist of the hard suction hose from a pumper, and vibration. The result is loss of service of the hydrant, and vital time lost, when a pumper must make a set-up at another hydrant. Screwed-in nozzles do not require this inspection.

(10) The fit of the nozzle and nozzle-cap threads is carefully observed. They should be free-running, but not loose to the extent that they might be blown or knocked off. Threads on old caps are sometimes rusted to resemble only mild corrugations. These are unsafe and must be replaced.

(11) The nozzle-cap threads are lubricated and the operating nut threads oiled through the screw-hole. A liberal amount of lubricant is introduced around the operating nut to flow down into the packing and thrust collar. All excess lubricant is wiped off the hydrant top and caps. A heavy oil, such as has been effective for railroad-signal lubrication and which does not oxidize readily or harden in winter, is excellent for this purpose. A fluid is better than a solid lubricant.

(12) The caps are then replaced snugly to prevent tampering by children or others, but not so tight as to delay the Fire Department in opening the hydrants for use. It must be remembered that caps get tighter with time.

(13) Night inspection crews are required to report any unusual operating conditions or obstructions encountered.

(14) Finally, the crews listen carefully for leaks again, this time not only for leaks at the hydrant, but for those at some distance, such as in services or in mains in the vicinity. As these inspection crews work at night, such leaks are more apparent than during the day, when there are more distracting noises and when services are being used more frequently.

See "The Inspection and Maintenance of Fire Hydrants" in THE MUNICIPAL INDEX 1939.

Snow Loaders and Fire Engines!

New York City's World's Fair Exhibit of Municipal Facts and Pictures

ANOTHER year of the New York World's Fair would offer quite an opportunity for the cities of the country to show what they are and what they have to offer industry. They have a much more practical story to tell than have the states, and each could tell it at a reasonable expense in the space of a good-sized booth. A palace of the cities would sum up to a practical and fascinating exhibit that would add still more substance to the Fair.

Fortunately, the New York City display, the only municipal government represented, is worthy of "the largest single financial institution in the United States after the Federal Treasury." It is housed in a permanent building 45 feet high covering 2 acres, which is intended eventually to be a year-around ice-skating rink.

Transportation

Entering the main door, with one's back squarely at the Perisphere and Trylon, one is confronted by printed and charter proof of the strength of the city standing behind its government. The Board of Transportation traces the growth of this value alongside the mileage of rapid-transit tracks as follows:

Year	*Miles*	*Millions*
1900	99	$2,880
1910	130	6,427
1920	190	7,859
1939	271	14,271

Whether the subways brought the increased values, or the people represented by the latter necessitated the provision of the new lines, the municipality is now the determining factor in an urban transportation system carrying 1,864 million persons annually. It is said that during the first two weeks of the World's Fair a German troop train passed westward over the bridges at Cologne every 10 minutes. During the rush hour every day, 12 trains per minute cross 42nd Street, New York City.

Sanitation

The work of the Sanitation Department, including the daily collection of 5,000 loads of refuse (500,000 cubic yards per week) and snow-removal and land-fill operations, is typified by a display of 17 photographs of the vehicles in use.

Type and Make	*Number in Use*
Dragline, Monaghan, of Bucyrus Erie Co.	3
Truck, The White Motor Co.	105
Snow loader, Joy Mfg. Co.	73
Sander, Good Roads Machinery Corp.	34
Crosswalk plow, International Harvester Co.	631
Enclosed body collection truck, General Motors Corp.	315
Tank truck, Mack-International Motor Truck Co.; Autocar; GMC	4
Flusher, The Autocar Co., body by Municipal Supply Co.	376
Dragline, Northwest Engineering Co., with Caterpillar tractor	4
Wrecker, Four Wheel Drive Auto Co.	20
Grader, Caterpillar; Allis-Chalmers Mfg. Co.	2
Escalator collection truck, General Motors Co. and The Autocar Co. body by Gar Wood Industries, Inc., and The Heil Co.	674
Snow broom, Allis Chalmers Mfg. Co. and Caterpillar Tractor Co.	50
Broom, Fox Rotary Snow Broom Co.	23
Snow-Go loader, Clauer Mfg. Co.	58
Collection truck, The Autocar Co.	20
Tractor, Caterpillar Tractor Co.; and wagon, Athey Truss Wheel Co., Chicago	47
	18

Both types of snow loaders have performed severe service at Lake Placid in the Adirondacks and in the streets of New York. Served by gasoline tank trucks, they stay on the job and load a truck per minute. In addition to the three gasoline trucks, there is a fuel-oil truck to feed the diesel tractors.

At worthless swamps along Jamaica Bay, the draglines dig off the top-soil, laying it to one side. Then refuse is dumped, sometimes to depths of 20 to 30 feet, and covered with the top-soil by bulldozers and dump-wagons. This kind of work went on for 40 years on Flushing dump, on the top of which now scintillates the World's Fair. Incidentally, it is pointed out that six days' city refuse would cover the 700-foot Trylon. The practical sanitary needs of the Fair are met by five flushers, five sweepers, and twelve collection trucks.

The complexity of subway and tunnel construction is presented by the longitudinal-section model revealing the equipment involved in a short strip of the new Queens Midtown vehicular tunnel under the East River.

This large tunnel is being driven by shield through pinnacles of rock, glacial deposits, riprap, and old sunken coal barges, and with the eastward tunnel completed, will be holed through westward in September. The shield structure, the hydraulic ejector arm which picks up the 1½-ton pieces of tunnel lining, and the hydraulic jacks, are of Watson-Stilman make. The Conway mucking machines, digging through the bottom pocket of the shield, load either directly onto the cars or onto a Jeffrey belt conveyor.

Public Safety

Traffic Engineering and Safety is a potent police division these days, and the city operates 382 motorcycles and 37 patrol cars for this service only. The regular radio-patrol cars are directed throughout the 84 precincts by the Police Telegraph Bureau, which also transmits calls from the departments of hospitals, health, and sanitation, and from the state and federal departments and the public utilities. The Police Laboratory proclaims its proficiency in fingerprinting, microscopy, spectroscopy, chemistry and photography.

Close by are the factual exhibits of the Fire Department, where one learns that a first alarm is answered by four pumpers and two hook-and-ladder trucks and one water tower; a second alarm by five pumpers, a ladder truck, and a hydrant apparatus, while three pumping engines and a ladder move up to cover the absent pieces now working at the fire; a third alarm, by five more pumpers and a ladder truck and a fuel wagon, while four distant engines and two ladder trucks move up.

The city's fire artillery comprises

Courtesy of "New York Advancing"
Permanent Recreation Building Which Now Houses the World's Fair Exhibit of the City of New York

293 pumpers, 172 hook-and-ladder trucks, 131 hose wagons, 4 searchlight trucks, 5 rescue trucks, 13 pieces of hydrant-thawing apparatus, 8 water towers, 3 fuel wagons, two wrecking trucks, 1 smoke ejector, 140 chief's and other cars, and two ambulances. All ladder trucks carry, or will carry, 1,250 watt-Homelite generators, and two 500-watt and one 250-watt floodlights of the Pyle National Co.

The ten fireboats, which together can throw 100,000 gpm, were equipped in 1937 with General Electric two-way radio served by a 500-watt main transmitter and five pick-up receivers (with three new ones coming) scattered over the city, and 50-watt transmitters on the boats. The new "Firefighter" powered by General Motors diesels driving Westinghouse generators, includes a nozzle that throws 6,500 gallons of water per minute at 150 pounds pressure.

Water for the multitudinous needs of the entire city comes from five sources, with one new one under construction, as follows:

Supply	*MGD*
Delaware River (underway)	539
Catskill-Bronx-Bryan	516
Croton	309
Ridgewood	108
City-owned wells	48
Private companies	36
	1,546

The system of 4,978 miles of mains, 155,563 valves and 72,393 hydrants, furnishes a daily consumption of 130 gallons per person.

Finance

The Budget Director reports that requests for appropriations amounted to 727 millions plus 400 millions for capital structures, and that the budget comprises expenses of 683 millions, a capital outlay of 130 millions, and relief expenditures of 116 millions.

The Finance Department says the money comes not only from taxes, but from water earnings amounting to 37.5 millions; transportation income of 2 millions; interest and penalties, 11 millions; fines of 7.7 millions; and pier rentals of 6 millions. For materials and equipment, the Department of Purchase spends at the rate of $3,310 per hour, and 29 millions annually. The Corporation Counsel is confronted by $35,000,000 worth of negligence actions per year, on which about $670,000, or 2 per cent, is recovered.

Truth in Civic Advertising Can Be Attractive

THE April issue of the magazine *Advertising and Selling* has an article, "False Claims in Civic Advertising," by Eugene Van Cleef, on the kinds of civic promotion that do and do not accomplish their objective:

"The objective of city advertising generally is to entice new residents or new manufacturing industries—less often to attract new retail establishments. If people are drawn to a city expecting to find certain facilities, only to discover that the advance descriptions were fiction, the reaction upon the city must be unfavorable.

"Presumably the most that any citizenry may hope for is adequate food, clothing, housing, and cultural opportunities. People are content if, in addition, they may have the benefit of decent government, good schools, adequate churches, recreational facilities, accessible libraries, properly managed public utilities, and a dependable health department.

"The 'advertisers' of a community usually are the business men comprising the local chamber of commerce. That they hold a responsibility in giving out truthful information apparently is not yet fully appreciated. . . .

"What can be done? First, the chamber of commerce, or whatever other institution is involved, must determine whether its objective is to increase the population-size of the city or to increase the quality of its city. A mere increase in numbers may lead to serious social problems, such as slum conditions, numerous charity cases and labor difficulties, or may make living conditions less satisfactory for long-established residents.

"Before the depression, some chambers of commerce and industrial bureaus decided that the advertising of industries already established within their cities would be more effective than dealing in generalities and uncertain quantities. Two objectives were thus gained: promotion of the present industries; and the demonstration of tangible results growing out of the city's specific virtues. This procedure was not tested long enough at the time of the crash, but it seemed to be pointing in the right direction.

"This kind of advertising is informational. It will bear close scrutiny. It sets up no theories; includes no opinions; does not depend for results upon an exaggerated emotional appeal.

"As a matter of fact, advertising literature intended for manufacturers has improved in recent years. Many civic institutions, engaged in attracting industries, have learned that three classes of industries are available as potentialities—those that have failed elsewhere, branch factories, and new industries. The first type represents a risk which is not to be very strongly encouraged; the second includes a class few in number and usually not open to conviction on the basis of boom literature; the third generally involves local capital, presents an uncertain future, and requires a careful analysis of local conditions if the industry is to be firmly established.

"Improvement can still be made in literature issued for the tourist, for convention groups, and for individuals seeking general information about a city. It would seem that no one need be convinced of the fact that truth can be told as attractively as untruth, but the literature now circulating is not reassuring."

Installed in 1912 and 1920 in the Large, Well-Planned City Yard at Springfield, Mass.

Dual Asphalt Plants

Contribute to Program of City-Wide Paving

THE municipal asphalt plants of Springfield are installed in the City Yard on Taylor Street side by side, thus effecting savings in plant operation and personnel. The only essential differences in the two plants is that the older plant, installed in 1912, has since then been equipped with a vibrating screen, while the second, installed in 1920, has a rotary screen.

Aggregate Handling

A concrete trestle on the Boston & Albany lines runs along the side of the City Yard and has overhead pockets into which aggregates are delivered direct from the gondola cars. Overhead storage is provided for ¾-, ½-, and ¼-inch stone and sand. Trucks are loaded direct from the pockets, and dump into the receiving ends of the cold elevators of the plants. Additional storage is provided on the ground in stockpiles, which are reloaded to the trucks by a Barber-Greene loader.

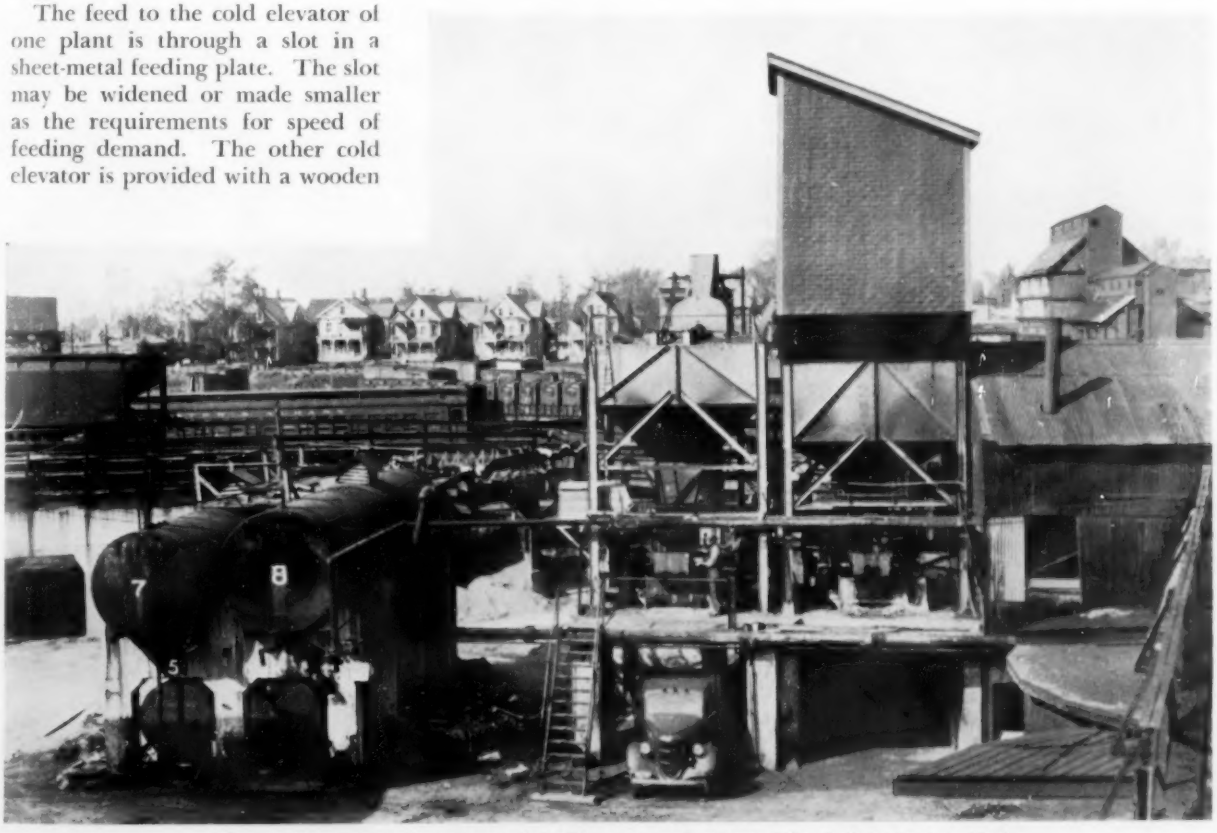
The feed to the cold elevator of one plant is through a slot in a sheet-metal feeding plate. The slot may be widened or made smaller as the requirements for speed of feeding demand. The other cold elevator is provided with a wooden feeding hopper with a similar slot feed.

Asphalt Storage

Asphalt is purchased on contract under rigid specifications from asphalt companies serving this region. It is received in tank cars on the trestle, and after heating from the Yard heating plant it is pumped to the two 60,000-gallon storage tanks. One of the tanks is reserved for the 60-70 penetration asphalt used with the plant mixes, and the other for the 85-100 penetration asphalt used for asphaltic macadam construction by the penetration method. This latter is also used at times for plant mixes where a sheet top mix is used to resurface old brick pavements.

The asphalt storage tanks are arranged with an inner tank, which is the only part heated to the maximum for plant operation, 310 degrees F. Three sets of coils within the inner tank are supplied with steam from the Yard heating plant. A spider of steam pipes on the bottom of the tank is also used when the demand for the asphalt is great and the inner coils cannot supply the heated material rapidly enough. With this type of tank it is necessary to heat only a small portion of the asphalt to the highest temperature.

Between the two tanks is a small house where the two steam-driven Warren Brothers asphalt pumps are located. These are operated con-



A View of the Springfield, Mass., Asphalt Plants from the Top of the Asphalt Storage Tanks

tinuously, as circulating pumps, even when the plant is shut down.

Fuel oil for the operation of the Yard boilers as well as the drier burners is stored in two 10,000-gallon tanks, one on the ground and the other on a trestle.

Plant Operation

The cold elevators of each plant deliver the aggregates to the Pacific type driers furnished by Warren Brothers. They are 20 feet long and 5 feet in diameter and are equipped with fuel-oil burners for the heating of the aggregates as they are cascaded through the driers. The dust is collected by a special collector designed locally, which has been copied extensively elsewhere. A large blower pulls the heated air through the drier and then up into a large reinforced wooden box containing trays of coke with sprays of water playing over them from above. This completely removes the dust from the air, and the dirty water is discharged into a nearby sewer. A single blower and washing system serves the two plants.

The older plant is equipped with the 2-deck vibrating screen and four hot storage bins for ¾-, ½-, and ¼-inch stone and sand, while the newer plant has the materials proportioned as fed to the cold elevator and has only two hot storage bins, for stone and sand. It has a single rotary screen. Each plant has a separate Brown indicating pyrometer showing the temperature of the material as delivered to the hot bins.

The plants have pug-mills capable of handling 1-ton batches, but the batches are frequently split and the pug-mixers run on 1,000-pound batches for convenience in loading the lighter trucks. Each pug is driven by a 75-hp General Electric motor. The aggregates are weighed out in the batch-boxes, which are furnished with Fairbanks beam scales. The asphalt is weighed out in the asphalt weigh-box, which has a dial scale. The asphalt is pumped continuously through a loop and back to the storage tanks. The material is delivered to the weigh-bucket by a single valve. Four-way steam valves at the pug-mills control the opening of the slide gates beneath the mixers to deliver the batches to the trucks below.

Trap rock "float" or dust is used for filler in the sheet-asphalt mixes and is received in paper bags and unloaded from the cars on the trestle by means of a roller conveyor to storage in a shed at the elevation of the mixer platform. It is handled to the pug-mills by other roller conveyors, which are set up and removed as required.

Westinghouse switches control the operation of the various units throughout the plant. In addition to the two large storage tanks for asphalt mentioned earlier, there are two 10,000-gallon tanks for the storage of asphalt emulsion and one for 85 road oil.

Labor Organization

The labor organization for the operation of the two plants includes the following, who cover the two plants: the foreman, a timekeeper and the burner man for the drier burners. There are also two men on the stone pockets feeding the trucks, and three 1½-ton trucks shuttling from the pockets to the cold elevators. One oiler handles the lubrication on the two plants. The separate labor required for each of the plants includes the following in duplicate: two feeder men, one for stone and one for sand; two weigh men, one for aggregates and one for asphalt; one oiler for the trucks. One man attends to the furnishing of the filler material for either or both of the plants.

Asphaltic Mixes Produced

(For 1,000-Pound Batches)

	Sheet Binder	Sheet Top	Stone-Filled Sheet	Asphaltic Concrete
¾" stone...	500	—	250	—
½" stone...	100	—	—	450
¼" stone...	—	—	—	210
Sand	342	790	543	278
Filler	—	100	125	—
Asphalt	58	110	82	62

The materials are mixed in the pug-mill for one full minute after the asphalt has been added. The bodies of the city-owned and the hired trucks hauling the hot mix material from the plants are oiled for each load.

The annual production of the plants has run as high as 25,000 tons in good years. In 1933, which was one of the largest years from the paving standpoint in Springfield, a total of 133 carloads of asphalt were used, 20 carloads of fuel oil, 15 cars of gasoline, 6 cars of emulsion and 2 cars of 85 road oil. An Adnun spreader is used by the city for the laying of the hot asphaltic materials on the streets.

Testing Laboratory

The city has recently completed an excellent testing laboratory at the City Yard as a WPA project. It is fully equipped for the testing of all materials used by the city in construction, including fuel oils, gasoline and asphalt. Among the newer pieces of equipment included in the laboratory is a Rotarex bitumen extractor, penetrometers, flash and fire testers, viscometers, a Hubbard-Field stability testing machine, a Ro-Tap sieve shaker, a Fries electric oven, a Troemner balance, a Tinius Olsen cement briquet testing machine, and a Tinius Olsen 150,000-pound concrete testing machine.

The municipal asphalt plants of the city of Springfield are operated under the direction of Cornelius W. Phillips, Superintendent of Streets. William H. Woodward is Testing Engineer for the city in charge of all material testing and of the production of the plants.

T. R. K.—906.

Insurance Required on City-Used Private Autos

BECAUSE municipalities are generally liable for damage caused by automobiles driven on government business, many of them are requiring insurance on both privately and publicly owned cars used by employees at work, the Municipal Finance Officers' Association reports.

A sample survey of 30 cities made by the Association showed that 11 of them insist upon the insurance coverage.

The city pays insurance premiums in eight of the eleven cities, according to the survey, while in the others car owners carry the insurance. In Lansing, the city pays 8.66 per cent of the cost.

Most of the cities require $5,000 insurance for property damage. Public liability coverage in the 11 cities ranged between $10,000 and $20,000, with only two as low as $5,000.

It's Got Everything!

A Municipal Truck for All Emergencies

By Edw. L. Boatright
Executive Director, Municipal Fire College, Portland, Ore.

THE 12-ton enclosed all-disaster truck, presented to the Portland, Ore., Bureau of Fire by Aaron M. Frank and named in honor of California Fire Marshal and former Portland Marshal Jay W. Stevens, has not only evoked much local interest, as one of these photographs shows, but has also elicited hundreds of congratulations from municipal officials over the entire country. Small radio sets carried by the men are a feature.

The truck is equipped with a thousand tools and devices, but of primary interest is the adequate provision of emergency electric power, floodlights, life-saving apparatus, and radio, loud-speaker and telephone communications. Emergency power is supplied by a 1,500-watt stationary generator, three Homelite portable units totaling 5,000 watts, and a Homelite 3-inch portable pump. Outdoor light is provided by eight 500- and 200-watt portable Crouse-Hinds floodlights with 1,250 feet of Tyrex cable in lengths of 50 to 125 feet with twist lock type rubber-covered connections.

First-aid apparatus includes MSA oxygen-breathing and gas masks, and an E and J resuscitator, inhalator and aspirator.

The communications systems include a portable radio phone which I believe will revolutionize fire-

Upper Left—Making Portlanders Acquainted with the New Truck Shown at Right with Fire Alarm Superintendent Charles Ralph, Assistant Chief Harry Johnson, Fire Chief Edward Grenfell, Hoseman Roy Lowe, Captain Al. Sherk, and Battalion Chief Edw. L. Boatright. Lower Left—Two Oxygen Masks and Two MSA All Service Gas Masks, and at Right the E and J Resuscitator in Use

fighting procedure and solve a definite problem for commanding officers of fires. The portable park set, weighing 17½ pounds, is carried on the back and has two thumb knobs, one for sending and one for receiving up to 15 miles. This same type mouthpiece installed in the Burrell type gas mask provides communication in buildings filled with smoke and gas. Messages can be sent and received through this portable radio equipment and redistributed through the loud-speaking unit to all fire companies within a mile radius. In this way the commanding officer inside the building will not have to be outside in order to direct operations of companies.

The loud-speaker, developed by the Bureau of Fire, is an original design, consisting of a quadruple driving unit with a continuous undistorted output of 120 watts of audio power feeding a very compact directional horn. This horn, equal to four of the conventional heavy-duty 6-foot trumpets, is mounted complete in a 50-inch circle 14 inches deep. When the truck is driven, the entire speaker assembly is dropped down flush with the top of the car. When the assembly is raised, as shown in the illustration, it can be turned in any direction and tilted to any elevation. In this way the sound may be directed to any desired point, as to the top floors of a building or to a ship, and intelligible speech may be transmitted approximately two miles in the open. We are also connected with two-way stations operating on police-radio frequencies and with all the law-enforcement radio stations in Oregon.

The car is 29½ feet long, 7-11/12 feet wide and 9½ feet high. The chassis is equipped with Timken bearings, a 135-hp Hall Scott engine with 5-speed transmission, and a body of steel and aluminum with 2 inches of glass wool between inner and outer walls. The tires are equipped with Goodyear Lifeguards, which are designed to take the danger out of blow-outs.

How Improve the Work Relief Program?

(Continued from page 77)

Utah, who states that "it would be a terrible blunder to give direct relief to able-bodied men and women when we need many improvements to raise standards of living."

The Arizona State Appraisal Committee writes that:

"It was the unanimous judgment of the Committee as well as all sponsors that the work program is much preferable to direct relief. When all factors in the program are studied carefully, they seem to constitute a strong case in favor of the work program. Worth-while improvements and services are realized and the effect on the recipient of help is much better. History from ancient Rome to the present points out the dangers of direct relief. It may destroy both the community and the individual."

And the Massachusetts State Committee reports:

"Through the Federal works program tax rates have been favorably affected, relief burdens have been met, improvements of a permanent value have been secured, and the self-respect of thousands has been maintained. . . . The communities appear to be well satisfied with the quality of workmanship. . . . It can be stated that with very few exceptions the burden of evidence is predominantly in favor of work relief. . . . The relative worth-whileness of the programs to the needy unemployed people is not debatable."

Unearned Increments

This U. S. Community Improvement Appraisal quotes without comment certain instances of how local land values have been increased by WPA expenditures:

"About 15 years ago the dam in Milton Lake had broken and the city never had funds to rebuild it. Through this project the dam was rebuilt and the lake dammed and property improved, and this has now opened a large section heretofore undeveloped and the city will reap great value due to the increase of assessable values."—JAMES E. BARGER, Mayor, Rahway, N. J.

"When the Federal Works Program began, the valuation of Transylvania County was very low, and tax rates were high; the county was in default. Being in default, this county could not sponsor the projects and therefore lost many good projects. Today the valuation has increased approximately 20%; taxes were paid during the past two years for as far back as seven years. Some of the forgotten men (now on WPA) have paid their taxes and improved their small farms and houses, and have built sanitary privies."—Transylvania County, North Carolina.

"It has not added one penny to the cost of taxes. The water works has indirectly added thousands of dollars of value to the town. People want to live here now. Before we had water nobody wanted to live here."—T. G. FLOYD, Turrell, Ark.

Few of the reports from municipal and county officials make such direct references as these to the effect of Federal aid in presenting unearned increments to local landowners. But since urban land values are maintained or increased largely by public expenditures, the justice of allowing such beneficiaries to bear their share of the resulting tax burden seems evident. Here is a problem meriting much more careful study.

Editorial Note.—The members of the National Appraisal Committee responsible for the above-mentioned report are:

Morton L. Wallerstein, CHAIRMAN, Past President, American Municipal Association, Richmond, Va.

Donald R. Hooker, Chairman, Mayor's Committee on Recreation, Baltimore, Md.

George F. Zook, President, American Council on Education, Washington, D. C.

Abel Wolman, President, American Public Health Association, Baltimore, Md.

Robert E. Buchanan, Dean, Graduate College, Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa.

Lewis Mumford, Amenia, N. Y.

Donald Comer, Chairman, Board of Avondale Mills, Birmingham, Ala.

James R. Branson, SECRETARY, Room 305, Lemon Building, 1729 New York Avenue, N.W,. Washington, D. C.

In gathering and analyzing the factual material used by the Committee in reaching its conclusions, Secretary Branson had the cooperation of J. Charles Laue.

The group which presented the report to President Roosevelt at the White House on May 8 included:

Mayor F. H. LaGuardia of New York City, Chairman; Mayors Richard W. Reading of Detroit, Joseph D. Scholtz of Louisville, and Ross D. Rogers of Amarillo, Texas—for the United States Conference of Mayors.

Harold S. Buttenheim, New York City, Editor of THE AMERICAN CITY, as President of the American Society of Planning Officials.

Charles F. Horner, Washington, President of the National Aeronautic Association; Franklin K. Lane, Washington, District Vice-President of the National Aeronautic Association, for that Association.

Stanley Woodward, Washington, member of the Board of Directors of the National Recreation Association.

Miss Maude Aiton, Washington, past President of the Department of Adult Education of the National Education Association.

Thomas H. MacDonald, Chief of the United States Bureau of Public Roads.

Earl D. Mallery, Washington, for the American Municipal Association.

J. Milton Patterson, Baltimore Executive Secretary, of the Board of State Aid and Charities of Maryland, for the American Public Welfare Association.

Dr. George F. Zook, President of the American Council on Education, of Washington.

Salem Sewer Outfall Cleaned by Machine

(Continued from page 73)

After passing through the line, the machine was picked up by a diver at the outlet end, and hoisted at the bow of one of the boats used, and returned to shore.

Results Attained

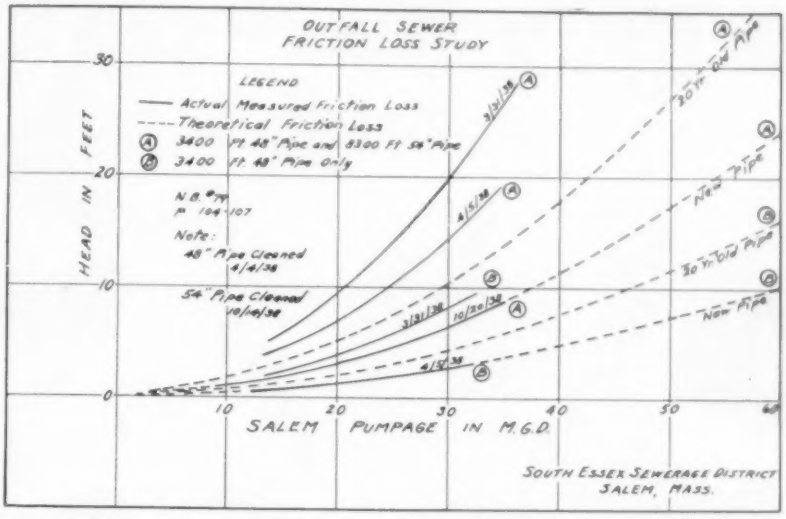
It is estimated that about 1,000 tons of lime scale was removed from the 54-inch outfall alone, and the diver, in retrieving the machine, reported a conical pile of the scale around the outlet, about 100 feet in diameter and 8 feet high, and soundings from the surface checked closely with these figures.

After the machine had been removed, friction loss measurements were taken which showed that this 54-inch outfall had also been completely cleaned; the measured friction loss corresponding exactly with the theoretical values for new clean pipe.

Pressure-gage readings taken during the cleaning of both the 48- and 54-inch lines showed that about 18 pounds per square inch was required to force the machines through the pipe lines. The quantity pumped during the passage of the machines was at the rate of about 22 million gallons per day in both cases.

Costs

The type of contract with the company for this work was for a lump-sum payment to the contractor for the use of the machine and a company superintendent, with the District furnishing all labor, tools, and equipment for the handling of the machine, and the District to stand the burden of removing the machine should it become lodged in the pipe. The cost of the cleanings was $1,000 for the 48-inch force main, and $2,500 for the 54-inch outfall, and the lines were restored to their full carrying capacity, which means that for any given head the carrying capacity of the pipe lines was nearly doubled; or for any given rate of pumping, the friction head was about one-third of what it was before cleaning.



Friction Losses in the 48-Inch Force Main and 54-Inch Outfall Sewer Before and After Cleaning

The writer wishes to express his appreciation for the genuine and cheerful cooperation of the National Water Main Cleaning Company, as the contractor, in the many difficult features of this rather unique job; and also to the Submarine Signal Corporation for its interest and assistance in the selection of the listening instruments.

Water-Works Improvements at Clarksburg, W. Va.

(Continued from page 79)

ating floor level with an extension handle of the cut-off valve for the diluting water and the brine meter dial, which has an adjustable contact cut-off for the brine pump at any desired quantity. There is also a visible elevation gage in the basement so that the operator can check the quantity of brine actually removed from storage.

Operation and Personnel

The new zeolite softeners and filters were put into operation March 2, 1939. The total cost of the 4,000,000-gallon zeolite water-softening plant and the 3,000,000-gallon addition to the rapid sand filters was $96,074.18. Perkins Boynton, Chemist for the Water Board, is in charge of both the filtration plant and the water-softening plant. Fuller & McClintock, consulting engineers, New York City, who have been engineers for the Clarksburg Water Board since the first plant was built in 1910-1911, designed this plant. Scotland G. Highland is General Manager of the Clarksburg Water Board. Patterson Engineering Co., Detroit, Mich., was the general contractor. The zeolite was furnished by Permutit Co., meters and controls by Simplex Valve & Meter Co., pumps by Allis-Chalmers Mfg. Co. and Yeomans Bros., operating tables by American Water Softening Co., underdrains, troughs and brine distributors by Johns-Manville Corporation, pipe and fittings by Glamorgan Pipe & Foundry Co., and valves by The Crane Co.

Both Papers and Exhibits Are Important at the American Water Works Association Convention at Atlantic City, N. J. June 11-15, 1939

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Modern Garbage Disposal

(*Continued from page* 101)

the entrance of rats. It is implied, although not definitely expressed, that the finished work will be so compact that these rodents will be unable to penetrate to the garbage. This might be true, if the only means of ingress were through the top of the freshly packed fill, but there is nothing to prevent entrance through the sides or ends, either through existing openings, or openings formed by settlement. With the settlement of the material, particularly the rubbish, many voids are bound to appear, especially in the bottom and center of the fill, through which ready access can be had to the garbage. In addition, the natural voids formed by the incombustible materials in the rubbish, such as tin cans, bottles, crockery, and the like, will always be available.

Actual inspection of the bulldozer operation at the site of the fills by the author shows its effect as a compacting medium is negative. This was to be expected, when it is considered that the crawler treads on such a machine are designed to distribute the load over as great an area as possible and enable the tractor to operate on unstable ground.

While it is possible, upon completion of work in a particular location, to top off the fill so as to present a neat and level-looking surface, there is no reason to believe that such a condition will be permanent; on the other hand, there is every reason to believe that uneven settlement will occur, causing a cracking of the top surface, through which air, as well as vermin, can penetrate. This will immediately start the process of decomposition with its resultant odors, again bringing about the conditions found at any ordinary garbage dump.

Other Sanitary Fills

The new method of refuse disposal advocated for New York is compared to the sanitary-fill scheme used in San Francisco, Calif., and the "controlled tipping" practice in England. The experience of Oakland, Calif., with its sanitary fill is of interest. Writing in THE AMERICAN CITY, June, 1927, page 787, W. W. Harmon, Superintendent of Streets in Oakland, states in part:

> "Officers of the city decided to build a sanitary fill in the Oakland harbor front, spreading the refuse material over a large area of reclaimed land and covering it with sand. This, it was believed, would be a cheap and efficient method of filling-in the portion to be reclaimed, but as harbor development has progressed, it seems that there is not enough room for placing excavated material.
>
> "In my opinion, there is no such thing as a 'sanitary fill.' Dumping sand on garbage amounts to the same thing as building a roof on a rat's house. The practice in Oakland proved to be just that. The fill caught fire one day and literally thousands of rats were smoked out and driven to other parts of the city while the Fire Department battled with the conflagration.
>
> "Shortly after this, the Port of Oakland was quarantined, by the War Department of the Government, because of unsanitary conditions on the waterfront, and I received permission from the City Council to proceed with my plans for improving on the former method of disposing of the city's waste by dumping it into Davy Jones' locker. The first load went out of Garbage Park in the late fall of 1925."

It is worthy of note, that the above was written as a result of many years experience with so-called "sanitary fill," and not at the beginning of an experimental period.

Comparison between "controlled tipping" in England and the "land-fill" method as practiced in New York is meaningless, as neither the methods nor the characteristics of the materials used are comparable. In England, the major portion of the material brought to the fills is of an inert nature, and care is taken to exclude large bulky materials and to hold to a minimum the percentage of putrescible matter. In spite of these precautions, W. F. Goodrich in his book, "Refuse Disposal and Power Production," has the following to say in commenting on "controlled tipping" as practiced in Great Britain: "Needless to add, putrefaction does not take place under average conditions, and it is impossible to defend such a system; it is filthy and unsanitary in the extreme. The advocates of the refuse tip are well aware that it is a menace to the public health, but they fondly imagine that their every action will be finally judged from an economic standpoint."

Hauling Costs and Truck Maintenance

No mention is made in any of the published descriptions of the New York land-fill method as to whether there is an increase in hauling costs due to the difference in location between the land fills and strategically located incinerator plants. The land fills in New York are as yet too new to determine whether additional charges will have to be made for truck maintenance, as a result of continued travel over rough and unpaved roads and on top of fills only partly completed.

An accurate check on the economies claimed for the land-fill method over incineration is next to impossible, for in New York City the quantities in each case are measured in cubic yards. Estimates of truck capacities, when handling city refuse, can be many and varied, especially when the refuse is collected in closed trucks and consists of a mixture of garbage, rubbish and ashes. In the article of September 1, 1938, in *Engineering News Record* it is stated that "at present rate of operation, the land fills will thus save the taxpayers about a million dollars a year"; and also the cost figure of 6 cents per cubic yard is given for disposal by this method.

It is therefore to be expected that the Sanitation Department's budget for the year 1938 would show a saving of at least one million dollars over any of the years immediately preceding the adoption of the land-fill method of disposal. The only factor that could react against this saving would be an increase in refuse production, and statistics from other cities, where accurate tonnage records are maintained, do not reflect such an increase.

In comparing the land-fill method of disposal with incineration, much stress has been laid upon the comparatively low cost of the former, but the argument could also be advanced that perhaps the cost of the latter was too high. The

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A pendulum, being controlled by gravity, requires much less power to operate than watch-type escapements. As a result, the gears in Karpark Meters can be and are compounded to give longer operation.

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It is impossible to harm the Karpark escapement by over-winding the mainspring. Over-winding will always seriously affect the operation of a lever (hair spring and balance wheel) escapement.

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Sanitation Department's figures for the year 1936 give a cost per cubic yard for incineration varying from a low of 13.41 cents to a high of 38.89 cents, with an average of 19.53 cents. In view of some of the recent developments in incinerator practice, it is not too much to expect that the low figure of 13.41 cents, which incidentally was obtained in a plant built some eleven years ago, could be reduced considerably.

Revenue from Waste Heat

The 1936 report of the Sanitation Department shows that 1,854,563.6 tons of garbage and rubbish were destroyed in the various incinerators throughout the city. Some additional material was disposed of in land fills. If we assume this material to amount to an additional 150,000 tons, we should have a total annual refuse production for New York City of about 2,000,000 tons. If all this were incinerated, and the waste heat therefrom utilized to produce power, there would be available for sale, or for use in city-owned establishments, some 530 million kwhrs of electrical power which at 1.5 cents per kwh would amount to $7,950,000 per year. The new sewage-disposal plants, as well as the city-owned subway system, might be among the potential users of this power, which could be produced either in one or in several plants.

The residue from these incinerator plants, amounting to some 300,000 tons of clean ash, entirely free from organic impurities, would be available for the filling-in of waste land. This amount, coupled with the additional quantities of steam ash collected throughout the city, would provide an excellent material for reclamation purposes. Certainly it would assure a much more stable and compact fill, and entirely eliminate the unsanitary aspects resulting from the land-fill method of disposal.

A Country-wide Problem

This discussion of methods of refuse disposal concerns not New York City alone, but every community where sanitation and safety are given proper consideration in the services rendered by the city to its citizens. When the nation's largest city, faced with increased operating costs in some departments, chooses to make an apparent saving through reverting to the use of an old unsanitary method of refuse disposal, one can envision the hard-pressed, economy-minded officials of other cities also reverting to the use of the old refuse dump. This would create dangerous unsanitary conditions throughout this great country, which prides itself on its progress and looks to the future for better and cleaner cities. Don't turn back the hands on the great clock of progress!

A Ringing Challenge

(*Continued from page 79*)

they pay out in municipal taxation. For instance, the people of Pittsburgh pay out each year in fire insurance premiums, above the actual fire loss, a sum almost half the amount of the entire city tax levy.

Annual fire losses in Pittsburgh reach an average of about $850,000. Average insurance premiums paid by the citizens of Pittsburgh average more than $8,000,000. This $8,000,000 figure for insurance payments alone contrasts with a total municipal tax levy which does not exceed $17,000,000. The cheapest telephone service which you can get in Pittsburgh costs $27 a year. The municipal tax on a $5,000 home is $66, and thus telephone service alone for such a home costs almost half of the manifold services provided by the city.

By attacking such conditions and by fighting to keep utility rates at reasonable levels, we can ease considerably the heavy burden of municipal taxation in effecting savings for the consuming—and taxpaying—public.

But even in inaugurating such comparatively simple steps toward financial soundness as I have enumerated, the cities of America for the most part find themselves cabined, cribbed, confined, at the complete mercy of their legislatures.

American cities must, sooner or later, achieve political independence, if local self-government is to survive and to be financially practicable. Socially created values must be utilized for social purposes if our system of preserving private values for private purposes is to endure. The cities must be permitted to tax the land values which they create, and to furnish the services which are necessary to civilized urban existence. If state and federal taxes are collected from the cities, they must be returned in due ratio to the municipalities which furnish them.

It is high time that we saw in this country a cities bloc which will function with the efficiency, fervor, and persistence of the farm blocs which have dominated congress after congress.

The most hopeful development of recent years has been the progress made in establishing a direct city-Federal axis, which by-passes the states. The Federal Government, through housing, PWA, WPA, the Federal Bureau of Investigation, the Civil Aeronautics Commission, and numerous other newly created or expanded Federal agencies, is dealing directly with the municipalities.

This development has come through the pressure of circumstances, which found the states unable to cope with urban emergencies, and through, in large measure, the devoted efforts of the U. S. Conference of Mayors and its officers. Perhaps we shall see the solution to city problems worked out in direct relationship between municipal and Federal agencies, with archaic state governmental forms removed from the contact under the stress of events. If not, we must sometime see an overhauling of state government to make possible the metropolitan districts, the taxation of unearned land values, the devotion of city revenues to city uses, the equal representation, the square deal which the cities of America must have if they are to survive as self-governing bodies.

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It is Permutit's Spaulding Precipitator! It takes less space and uses less chemicals. The water is softer and more stable. Operation is simpler—requires less attention. Within the last few months, more than a score of these plants have been installed for municipalities, treating water supplies between 5000 gallons and 8,000,000 gallons per day.

The whole story is in the booklet pictured above. In its clear, fully illustrated sixteen pages you will find all pertinent facts of interest to you and your engineering staff.

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Hammond, Ind., Water Works

Improvements and Reorganization

(Continued from page 84)

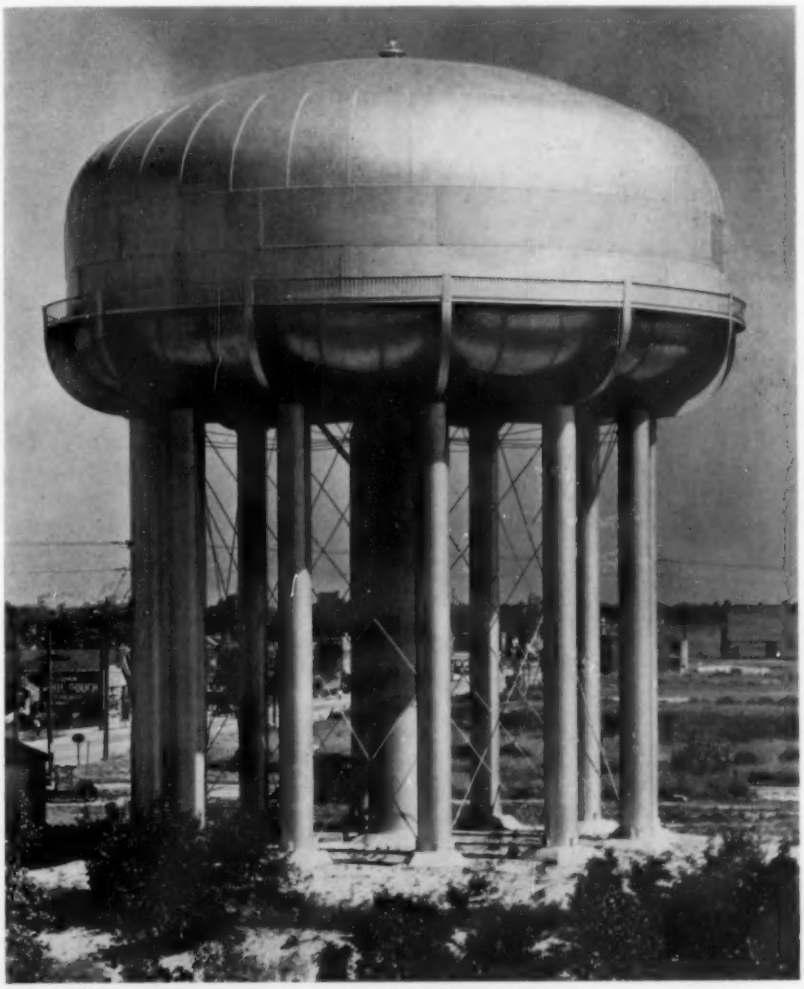
ground filtered-water storage basin in equalizing the operation of the intakes, low-lift pumps and filtration plant, with an attendant reduction in operating costs. The studies further indicated that a somewhat larger capacity tank would have been desirable, but this was impossible because of the limited amount of funds.

The tank is located south and east of the principal business district about 7½ miles south and ½-mile east of the pumping plant, at a junction of several of the most important transmission mains. It was also fortunately possible to locate the tank on approximately the highest ground elevation in the city, which has a relatively level topography. The tank has an operating range in head of 35 feet and a capacity of 1.5 million gallons. The overflow pipe is visible and so constructed that any overflow of water is readily observable. The elevation of the overflow is 125 feet above the high-lift pumps and 95.5 feet above the tank foundation.

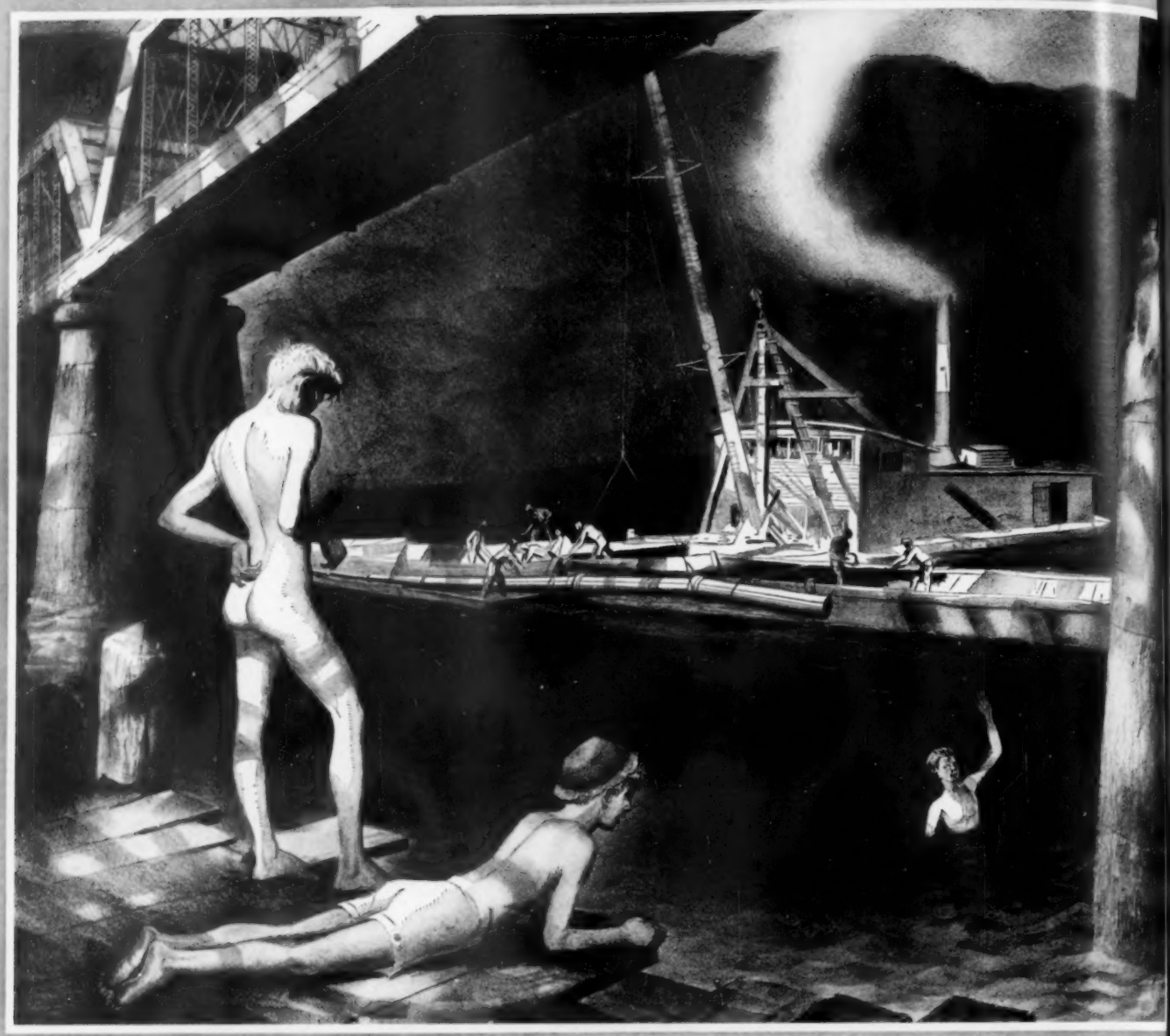
The tank is supported by twelve 52-inch-diameter tubular steel columns and an 8-foot-diameter riser pipe of ⅞-inch steel plates. The columns and riser were painted on both their exterior and interior surfaces, and all columns, with the exception of the riser pipe, were calked tight and tested by air pressure to insure their tightness and thus prevent any interior corrosion. The remainder of the tank was made watertight and, because of good workmanship, proved to be completely watertight at the time of its initial test. The tank shell is made up of steel plates varying from ⅞-inch to ½-inch in thickness, held together by some 40,000 rivets. The tank is designed so that the shell is in tension. The foundations upon which the columns rest are of concrete; design soil pressures being taken at 4,000 pounds per square foot after careful subsoil investigations and soil-bearing tests were made.

The tank equipment consists of the necessary ladders and manholes to provide ready access to all parts of the tank. A Westinghouse aviation obstruction light operated by a photo-electric cell is mounted on the highest point of the tank in accordance with the regulations of the Civil Aeronautics Authority. A small valve vault houses the Chapman altitude valve, which automatically opens and closes, thus allowing water to flow either into or out of the tank as variations in the amount of water consumed cause variations in the water pressure of the system; these variations are thus equalized by the tank. The tank has an Esterline Angus Co. water-level recorder which electrically transmits the elevation to the high-lift pumping station over a telephone circuit, where it is recorded on a chart, providing the pump operators with an accurate picture of the performance of the tank and the pressures being maintained in the water-distribution system. The remaining equipment in the valve vault consists of a small automatic Pemberthy sump pump powered by hydraulic pressure, and an automatic electrically operated space heater to prevent the possible freezing of the small pipe lines which connect to the water-level recorder.

The short period of time during which the tank has been in operation indicates a reduction in pumping costs and a decided improvement in water pressures throughout the distribution system. Sufficient time, however, has not yet elapsed to get a true picture of the extent



The New 1,500,000-Gallon Elevated Steel Storage Tank of Hammond, Ind., Water Works



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of the reduction in pumping-plant operating costs.

The entire cost of the tank aggregated $165,000; a close approximate breakdown of this cost being set out as follows:

1.	Foundations	$23,000
2.	Columns	44,000
3.	Girders	22,000
4.	Tank and balcony	52,000
5.	Valve vault and equipment	2,500
6.	Piping	3,000
7.	Preliminary, administrative and legal expense	2,000
8.	Cost of land	4,000
9.	Engineering, inspection, materials testing	7,000
10.	Interest during construction	4,000
11.	Miscellaneous items	1,500
	Total	$165,000

All this construction was financed with the aid of the Federal Emergency Administration of Public Works.

Distribution System Improvements

During the period of engineering investigation and design of the elevated tank it was noted that the distribution system was badly in need of strengthening by new mains in critical locations and that the tank would not function at its maximum efficiency unless this was done. Because the Board of Trustees did not have sufficient available funds to enter into the work at one time, a small fixed monthly amount of the revenues was set aside and is expended for pipe materials. Relief labor is secured through the medium of the Works Progress Administration and a pipe-laying crew organized and put to work. In this manner the Hammond Water Department has laid approximately 17,000 feet of 12-inch and 16-inch mains to strengthen its primary water-distribution system and approximately 3,000 feet of 6-inch mains to connect dead ends and provide better circulation. The water-main construction program is now approximately one-half complete.

Other Construction

In addition to the pipe work, new buildings, to replace old shacks, are now under construction. This construction includes a modern meter repair and testing laboratory, garages, storage sheds, fencing and walks, at the elevated storage tank site where sufficient land is available to accommodate them. By placing the buildings at this point, constant attendance is provided at the elevated tank, and the Water Department will be able to dispose of its existing yard site, which is inconveniently located in the business district, at a good profit.

The new buildings, costing approximately $40,000, will contain the office of the Supervisor of Distribution and his clerks, together with a complete shop for the repairing and testing of all sizes of meters. Suitable space has also been provided for the storage of meters, stock parts, and tools, together with comfortable working quarters for the men. Garages have been provided for the automobiles and trucks of the Department, together with stalls where repairs may be conveniently made. In addition, storage sheds are provided for pipe, castings, and valves. Suitable railroad facilities are available, and the site will be beautified by landscaping and planting, using relief labor.

Water Rates Finance Improvements

The results and value of careful planning and management are at once realized when it is considered that improvements, together with good maintenance and operation, can be carried out even on the basis of the low Hammond water rate, which scales from 10 cents per thousand gallons of water furnished to consumers, with a quarterly minimum of $3 for 30,000 gallons; to 5 cents per thousand gallons for industrial consumers.

The writer wishes to sincerely acknowledge all those who with earnest and talented effort and hard work made the Hammond program possible.

Realty Development for Service Must Replace Speculation

"WE can no longer count on land increment in either urban or rural communities as a major consideration in either real estate development or real estate financing," said E. L. Ostendorf, of Cleveland, Ohio, President of the National Association of Real Estate Boards, in addressing the annual conference of the National Association of Mutual Saving Banks in New York, last month.

"From now on, we must create real estate projects for their utility, not as a speculative opportunity. What is ahead is the workmanlike task—a more satisfying task—of providing the homes and business structures that people want and need at the price that they can afford to pay. This requires training and skill beyond any that has proved necessary in the past. . . .

"In matters involving city planning and zoning, all of us must join forces in protecting the equity investor. We have paid too little attention to this matter in the past. The foundation of all sound real estate investment rests upon the use to which property may be put. Today this is increasingly regulated by law. Much of the existing law has proved to be unwise. The zoning ordinances and the city plans of our communities must be overhauled and reconsidered. Ten times too much property has been set aside for business, and this has had a bad effect upon all business property values. Twenty times too much property has been set aside for multiple dwellings, with equally unfavorable results. Neither the mortgagee nor the realtor can assume in the future that someone else is going to look after these things. Our own interests are so deeply involved that we must look after them ourselves."

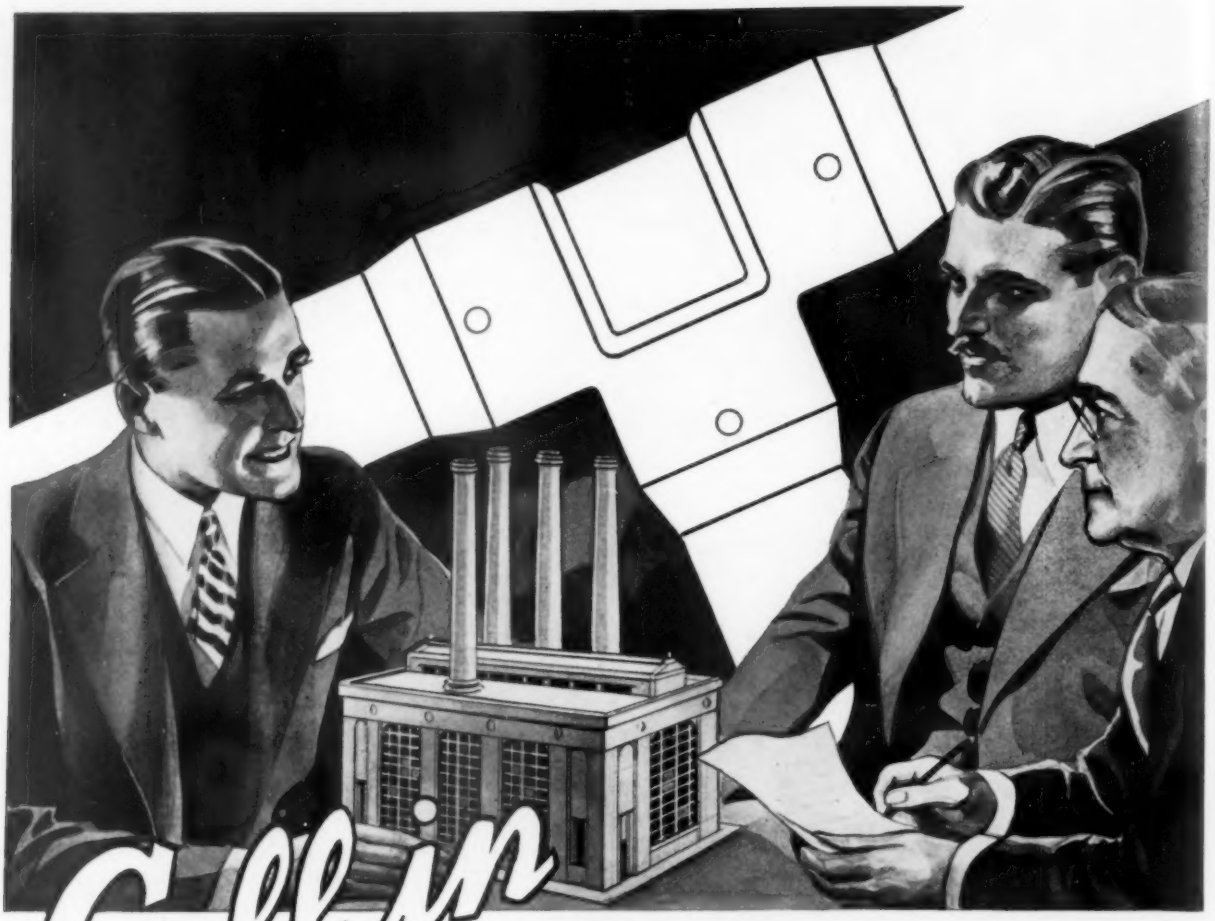
Trend Toward Lower Utility Rates Shown

A TREND toward lower utility rates, exemplified by decreases totaling nearly $4,000,000 in six states, is shown in a report to the International City Managers' Association. The downward trend has continued without any significant state legislation, the report said.

The reductions cited include about $1,000,000 in Virginia utility rates, $600,000 in intrastate telephone rates in Pennsylvania, and the following amounts in electric rates: $838,000 in North Carolina; $300,000 in South Carolina; $272,000 in Arkansas; and $350,000 in Indiana.

In addition, the report said, there has been a recent electric rate reduction totaling $350,000 a year for Louisville, Ky., and vicinity. North Carolina municipalities recently won a substantial reduction in wholesale electric rates and in power for municipal water pumping.

The report appears in the 1939 Municipal Year Book, published by the International City Managers' Association.



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TRADE MARK REG. U. S. PAT. OFFICE

COPPER PIPE AND FITTINGS

FOR YOUR NEXT COUNCIL MEETING

● Copper Pipe connected with STREAMLINE Solder Type Fittings is, in a great majority of cases, the most practical, efficient and lasting piping installation. Copper has long been recognized as the most durable of metals for piping purposes. There are many authentic cases on record where it has lasted for hundreds of years and still is as serviceable as when first installed.

Even the first cost of a STREAMLINE installation is very little, if any higher than rustable materials, and with the possible exception of unusual water conditions it never has to be replaced. Consequently, over a period of years its cost is actually much lower.

STREAMLINE Copper Pipe conducts hot water quicker and with less heat loss than ferrous piping. It requires less room to install, has no threaded joints to leak; it cannot rust, and vibration or settlement of earth does not affect its efficient service.

A STREAMLINE installation is the most efficient for water works use, for general plumbing and heating either new or replacement, and for many applications in filtration and sewage disposal plants.

STREAMLINE is your best possible insurance against future repair bills. When your plans call for pipe for any purpose, consider genuine copper STREAMLINE.

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

The Sacramento Water Works

(*Continued from page 75*)

second of 2 mg and the third of 3 mg, the water making six traverses in passing through. Any one of the basins may be shut off from the flow by sluice-gates and the flow by-passed through butterfly gates in the channel. The basins are cleaned at the same time, to eliminate unequalized pressure on the division walls, at intervals of six months. During the summer months Nuchar activated carbon is applied at the rate of 3 pounds per million gallons between the second and third mixing tanks.

New Pre-treatment Works

The new pre-treatment works built in 1933 parallel the old, but with a widely different way of reaching the same stage of clarification. The water enters the tanks without benefit of storage and grit removal, directly to a Dorr Detritor in a 50-foot square tank, where all over 60-mesh material is removed. The water flows from this treatment over a 22-inch weir to two channels leading to two aeration fields, each with 268 nozzles on 10-inch steel pipes. There are three methods of aeration available here: first, the nozzles; second, a riffled slab down which the water flows from the nozzles; and, third, air may be blown through mushroom heads beneath the spray from the nozzles.

The aerated water then flows to four mixing tanks entering either the end tanks or the middle tanks, as desired. Normally, only two tanks are needed for effective treatment. The mixing tanks are 52 feet in diameter and 24 feet deep, and are equipped with 4-speed electric motors driving double runner pumps with suctions at top and bottom and exhausting at the center. Alum and activated carbon are added in the first tank, and the water leaves the mixing cycle at the center of the second tank, going direct to two Dorr 100 x 100-foot clarifiers equipped with Sacramento baffles. These consist of 20-inch square holes about 3 feet from the top and bottom of the tank, with baffles spaced 4 inches from the wall at the entrance end of the flume and 1¼ inches at the far end. The plates are held at the proper distance from the wall by pipe spacers on the threaded bolts between the plates and the wall. On the effluent side experience has shown it advisable to close the lower ports and remove the baffles from the top ports entirely. This permits the water to be decanted into a collecting channel and thence to flumes at right angles leading across the end of the four 45 x 144-foot sedimentation basins equipped with Link-Belt Straightline sludge collectors. The top ports of these basins are closed on the entrance side, and the bottom ports are baffled with uniform spacing of the plates, while on the effluent side the procedure is reversed. The flow of the water is across the short dimension of the basins. The sludge is removed to a sump 72 feet in diameter and 12 feet deep, from which it is pumped when the river is high, and flows by gravity during low water. The discharge is 1,000 feet downstream of the intake. Each of the four sedimentation basins is self-contained.

The sludge collectors are supported by a steel structure which also holds up the 4-inch Gunited walls dividing the four sedimentation tanks from the inlet and outlet channels. A baffled channel with a pair of home-built butterfly valves to reduce the head on the filters leads to the filtration building.

Filtration

For the instruction of the lay visitor, the Water Department has built a miniature filter, which is displayed in the filter building, with a duplicate of one-half size at the Golden Gate International Exposition at San Francisco.

There are sixteen filters in the plant, of 4-mgd capacity each. The laterals are 3-inch steel pipe with ½- and 9/16-inch holes 6 inches apart on the bottom of the pipes for underdrains and wash water. The gravel and sand are each 24 inches deep, and from the top of the sand to the top of the wash-water channel is 42 inches. The filters are washed for 3 minutes with a 30-inch rise, using about 100,000 gallons of water supplied direct from the 270,000-gallon wash-water tank under a 60-foot head. The filters are washed at 72-hour intervals, when the loss of head is only 2 to 3 feet. The loss of head is read on a water column, and the filter is washed when the loss reaches 7½ feet unless the time limit is reached first. The control panels, instead of tables, carry only four levers for the control of the valves, and no gages. The filtered water flows to two storage reservoirs of 9½ and 5 mg capacity.

The plant regularly delivers 24 mgd of filtered water as an annual daily average, while its capacity is 64 mgd. The maximum summer rate of operation of the filters has been 43 to 44 mgd total with a peak pumping rate of 56 mgd.

Chemical Treatment

The rates of application of chemicals for the purification of the water at Sacramento depend largely on the character of the river water. The alkalinity of the raw water ranges between 18 and 120 ppm, while the tap water has an average alkalinity of 41. No lime is added to the water. The turbidity of the raw water varies from a low of 20 to an average of 58 and a maximum of 380 ppm for 1938. Leaving the sedimentation basin, it is 3 to 6 and zero in the filtered water. The hardness of the tap water is 70 ppm. The pH of the raw water is 7.4, and of the tap water 6.8. The bacteria counts run from an approximate minimum of 100 in the raw water to 15 in the sedimentation basins, one on the filters and zero in the tap water.

As a result of these water conditions, the application of chemicals varies considerably. The alum dosage varies from 0.6- and 0.8-grain to a maximum of 3 or 4 grains per gallon, with an average of 1.1, while the chlorine averages 0.25 ppm with a range from 0.15 to 0.40. Chlorine is purchased in 1-ton containers, which are stored outside the plant except for the next container to be used, which is rolled into the chlorine room so as to acquire "room temperature" before being put into the line. The appli-

A. B, C's of Highway Safety

Asphalt

Brick

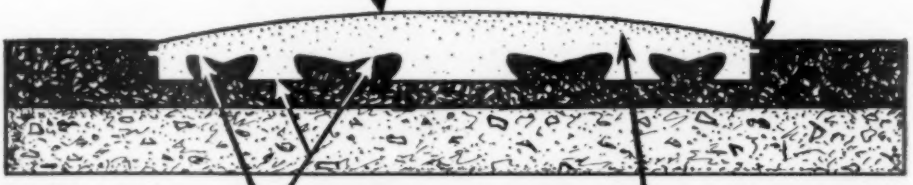
Concrete

SAFETY VISIBILITY PERMANENCY

Crown Highway Safety Markers' NEW TYPE of Construction, Guarantees . . .

VISIBILITY—Crown Markers reflect daylight, car lights, give high visibility in surface water, fog, mist, storm. Tires erase painted lines, but clean and polish Crown Markers! Shed foreign substances like dust, mud and slush.

WEATHERPROOF—Crown Markers are rubber. Will not expand or contract with heat and cold. Will not crack road surface. Rubber adheres, allows no water seepage at jointure with road to undermine road surface, causing fissures. Impervious to oils, greases and road grime.



5¼" MARKER CROSS SECTION SCALE 8"=1'-0"

PERMANENCY—Crown Markers require only one installation, patented base locks into road bed, wear for the life of the road. Crown Markers are unbreakable under heaviest traffic, offer no resistance to snow plows or highway maintenance equipment.

CONSTRUCTION—Crown Markers are solid rubber, color goes clear to the marker base, will not stain, tarnish, chip, crack or swell. No joints to gap. Non skid for pedestrians and cars.

FOR GREATER ECONOMY AND SERVICE

Highway maintenance costs go down as Crown Markers are installed. Fast and easy installations, for example: average forty Crown Markers per hour in asphalt. Once in they don't pull out! Can be installed in any hard road surface: asphalt, blockstone, brick, concrete, traprock, granite block.

Crown Markers are recommended for, Pedestrian Lanes, Stop Lines, Bus and Trolley Stops, Danger Lines for Railroad Passenger Platforms, Swing of Street Cars on Curves, Safety Zones, Highway Center Lines, special word marking such as: STOP, R. R.; SLOW; SCHOOL; TURN LEFT —RIGHT; CAUTION; DANGER; HILL.

For full particulars write . . .

CROWN HIGHWAY MARKER COMPANY

LUZERNE, PENNSYLVANIA

cation of the chlorine is controlled by a pair of Wallace & Tiernan vacuum feed machines with duplicate shut-offs inside the chlorine room and one emergency cut-off outside. The chlorinators are 300-pound machines.

The activated carbon is mixed by circulating with a 1-inch pump in the tank and then fed by gravity.

Alum Manufacture

At Sacramento the alum used for coagulating the impurities in the water is manufactured at the plant at less cost than commercial alum delivered at the plant. There are but few instances of this condition in the United States, since most plants find the commercial product more uniform and economical.

Bauxite is purchased from Sweethome, Ark., and delivered four or five carloads per shipment once a year, with the cars arriving on successive days to permit unloading without demurrage. The other ingredient, sulphuric acid, is purchased in tank cars from the Stauffer Chemical Co., at Stege, Calif. As received at the plant, the bauxite is unloaded from box cars into five storage bins. When needed for making a batch of alum, it is run into a trough, where a screw conveyor driven by a Foote Bros. gear drive moves it to a Raymond pulverizer, which reduces it to 200-mesh fineness, and then it is blown to a second-floor storage bin. It is tapped from this bin and raised again by a bucket elevator to the Fairbanks scales weighing hopper, having a screw feeder in the bottom for delivering it to the lead-lined wooden tank 8 feet in diameter and 15 feet deep. The 7,110 pounds of alum in a batch is mixed with 12,442 pounds of diluted sulphuric acid in the cooker tank by agitation with air. There are two storage tanks of the same size as the cooker tank. The alum syrup is delivered to these by gravity up to half the batch, and then by an air ejector for the balance.

The sulphuric acid is delivered as 52-degree Baumé acid and is thinned to 33 degrees before being fed to the cooker. For feeding the alum syrup to the water, a novel method is used. An air ejector raises the syrup from a storage tank to a constant-level lead-lined box with an overflow back to the tank. The alum is picked up from the constant-level tank by two buckets on a wheel and delivered through a lead pipe to a water ejector which dilutes it and drives it to the point of application. The bucket wheel is driven by a Reeves variable drive pulley permitting many combinations of speed of delivery of the alum, which is tested regularly to be certain of its strength.

In the alum house are two Baker-Hanson rotary compressors driven by 15-hp Westinghouse motors to furnish air for the agitation of the alum batches, which are made every five to ten days.

Lighting the Plant

The pump-house and filter building are located on a main highway and are illuminated every night until 10 o'clock with floodlights. As an added attraction to the passerby, an electric fountain between the two buildings is operated from a flasher with combinations of red, green and blue lights.

The older portion of the Sacramento water treatment plant was built in 1923, and the newer section was completed in 1933. Carl M. Hoskinson is Chief Engineer, Division of Water, R. E. Mittelstaedt is Superintendent, and C. L. Herb is Chemist and Bacteriologist.

Cities and Civil Liberties

EMPHASIZING the fact that the first battleground of civil liberties is the local community, Attorney General Frank Murphy, speaking at a joint meeting of the United States Conference of Mayors and the National Institute of Municipal Law Officers, on May 15, said in part:

"It is you gentlemen who man the front-line trenches. It is you who decide, in the first instance, whether to suppress the individual who criticizes the mayor or the President, or who wants to hire a hall, or who walks up and down the street with a sign on his back, or who spreads some alien doctrine in his newspaper, or who preaches some strange and unorthodox religion. You decide whether to silence him or let the democratic process run its course.

"I have been a mayor myself, during three of the bitterest years that the American people have ever suffered. I know that this responsibility is often a heavy one. I know that sometimes the pressure to turn one's back on the democratic faith in civil liberty for all seems to be almost irresistible. In moments of great tension, well-meaning people, gripped by hysteria, are likely to insist that the 'realistic' way to meet the threat of extremist philosophies is to deny to their advocates the liberty that they themselves, given the power, would take away from all others.

"Superficially, it is an appealing argument. It seems to be a common-sense method of fighting fire with fire.

"But it will quickly lose its appeal if we remember this simple truth: You do not and cannot strengthen or protect democracy by undermining it. And you begin to undermine democracy the moment you begin to draw the line and say that this or that person or group shall not have civil liberty.

"And every such step is another attack on the concept through which democracy functions—the concept that Justice Oliver Wendell Holmes spoke of as 'free trade in ideas.' Simply stated, that concept means that democracy gives a hearing to every idea. It gives every philosophy the *opportunity* to get itself accepted in the competition of the market. And ultimately—as history shows— the true idea, the right policy, comes out on top.

"I do not mean to say that we should not be on guard against dangerous and extremist notions that get into the market-place. We should, and must, be on guard, and not just some of the time, but all of the time.

"We have criminal laws that protect us against violence and incitement to violence. We should be ready and able to use them.

"We have legitimate methods of bringing propaganda groups into the open, and exposing their nature and their origin to the light of day. We ought to know not only what they preach, but who their sponsors are and where they get their funds.

"But as devotees of democracy, we cannot crush them and deny them a place in the market. We need not do this. We have no reason to fear their competition. *We have a better article to sell.* And because we *have* a better article, we can do a better job of salesmanship—a job of salesmanship that will endure long after the terrorism and the coercion of the autocrats have been proved futile."

"CATERPILLAR" LEADS AGAIN

. . . WITH A NEW,

ALL-PURPOSE MOTOR GRADER!

ANNOUNCING THE "CATERPILLAR" No. 112

1 *Offset on blade-beams, the blade of the new No. 112 Motor Grader can extend 6 feet, 5 inches beyond the line of the wheels to pick up large windrows of material.*

2 *The blade of the No. 112 Motor Grader can be changed from full ditching position to high-bank cutting position in less than a minute! If necessary, the blade can go to a 90-degree vertical angle. From that maximum slope and height, you can change the blade-position to meet almost any bank job.*

3 *The No. 112 Motor Grader ditches while traveling in reverse. Its full-revolving blade can be turned from forward to reverse in less than 30 seconds! This means you can go back and forth on mixing and subgrading jobs—and in narrow quarters—without turning the machine around.*

As a maintainer of city streets, the "Caterpillar" No. 112 Motor Grader will undoubtedly establish new records of economy, time-savings and coverage. Its first-gear speed is 1⅘ m.p.h. . . . its fourth-gear speed is 10 m.p.h. . . . and it operates in reverse at 2⅖ m.p.h.

Blade-positions with the new No. 112 are practically *unlimited!* Lift above the ground is 15 inches . . . side shift is 3 feet . . . maximum bank-cutting angle is 90 degrees . . . and the blade can be turned *completely* around.

Combine that blade-range with the driving traction to make it effective, and you see that the No. 112 Motor Grader is suited for *street-building* as well as street-maintenance—capable of handling the *whole* job from curb to curb!

Attachments for use with this machine include a V-type scarifier . . . a straight-type scarifier . . . a V-type snow-plow . . . and a roller.

Looking for a way to modernize your street department? Trying to lower your costs yet accomplish more work? You'll find that the new "Caterpillar" No. 112 Motor Grader (with a 4-cylinder, 46-horsepower gasoline or Diesel engine) can do both those things by *taking the place* of several machines! See your nearest "Caterpillar" dealer, or write direct for more information.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

A QUICK LOOK AT THE NEW
"CATERPILLAR" No. 112 MOTOR GRADER

Wide-reach, high-reach, full-revolving blade
Toe of blade can work directly behind the front wheel
Makes ditch cuts • Flat-bottom ditch cuts
High-bank cuts • Low-bank cuts
Blade can be trailed for finishing slopes

CATERPILLAR

REG. U.S. PAT. OFF.

DIESEL ENGINES • TRACK-TYPE TRACTORS • ROAD MACHINERY

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives, and Others

Hershey Stadium Opened

HERSHEY, PA.—Covering ten acres, and seating 15,360 people, the Hershey Stadium, which has been two years in building, opened in May with midget auto racing. The stadium is intended for college, professional and high-school football games, as well as outdoor entertainment. It will be one of the numerous sports facilities of Hershey, which has already a sports arena, four golf courses, and a park with baseball diamond and football practice field.

To accommodate the crowds coming to the stadium, 22 acres of parking space have been set aside; and two tiers have been built at the north end of the stadium where spectators may park their cars and sit in them to watch the games.

Floodlighting turns night into day for the midget auto races, or for games.

The stadium is built on a plot of ground 850 feet long and 512 feet wide. Each of the two stands is 77 feet wide, 440 feet long and 37 feet high; and contains eight sections. The distance between the two stands is 322 feet. There are 30 rows of seats, 33 seats to a row. Each seat is 18¼ inches wide—the size of a theater seat, and is made of specially treated fir, with the numbers burned in. Seats are so high that no danger can come to the spectator. A north stand seating 27,000, may be added if it is needed.

The infield of the track is 212 feet wide, 540 feet long. Outside of this football field—the grass for which has been growing more than two years, is the quarter-mile macadam track with a straightaway 30 feet wide and 40 at the curves, the radius at the end being 106 feet. The track consists of 12 inches of stone with 4 inches of smaller stone bound together with a special mixture of asphalt—making it as solid as an automobile-traveled highway. Outside the track is a grass plot 16 feet wide, and beyond that, sidewalks 10 feet wide.

Bounding the track is a 36-inch removable crash rail, built of wood for the protection of the drivers. Safety signals on the track indicate: green—all is well; amber—be cautious; red—danger.

There is a public address system which can be operated from five different places, as well as telephone and telegraph facilities. A scoreboard, 35 feet long and 27 feet high, placed on top of the ticket-office building and illuminated by spotlights at night, is manipulated by an operator, who uses 18 x 28-inch letters to tell his story. The time clock on the scoreboard, with a dial 12 feet in diameter, and a gong indicating the end of periods, are electrically operated.

The stadium is fenced in with a wire fence, and at the north end evergreen trees have been planted. At the south entrance is the ticket booth—a building 10 x 83 feet, with 20 ticket windows.

The drainage has been cared for with 12-inch pipe lines. The football field slopes slightly from a 15-inch center to an even distance on all sides. A sprinkler irrigation system has been installed to keep the grass in condition.

Underneath the stands will be a macadam pavement with eight comfort rooms —20 x 50 feet. In addition there will be rooms for various teams, with accommodations for showers and dressing, and also rooms for necessary equipment.

To build the stadium, 50,000 cubic yards of excavation were necessary. Required for construction were 25,600 bags of cement, 4,320 tons of sand, and 200 tons of reinforcing steel.

ALEXANDER STODDART,
Hershey Estates.

Centralized Purchasing

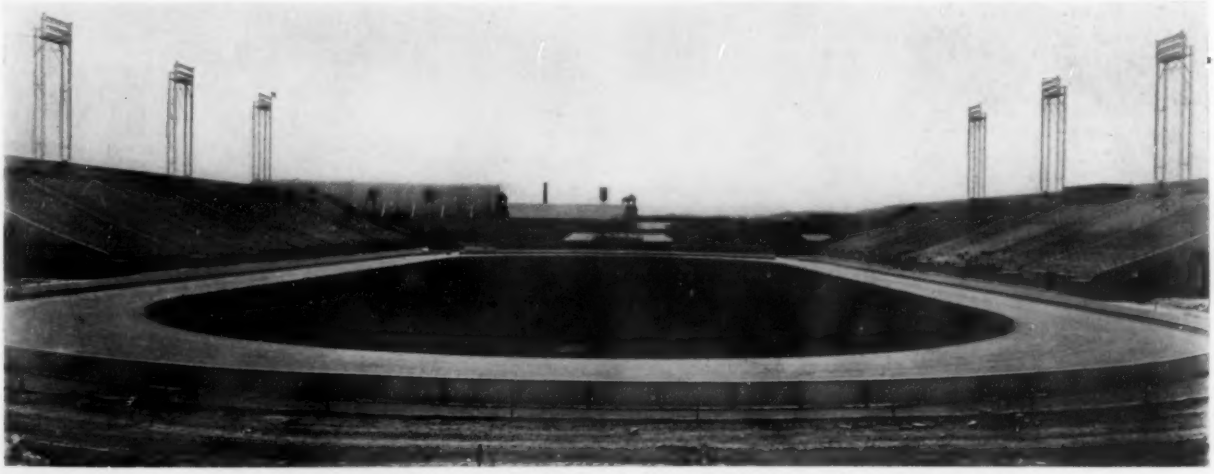
GARY, IND.—Realizing the necessity of reorganizing the affairs of the city of Gary, and especially those affairs relating to the purchasing of goods and services, the new administration of Mayor E. L. Schaible set up, on January 1, 1939, a centralized purchasing department which functions as a part of the Department of Finance, and is located in the office of the City Comptroller.

All municipal equipment has deteriorated, with resulting breakdowns and the necessity of emergency repairs. This rehabilitation work must take precedence.

Under the present plan of purchasing, each department submits its request for merchandise on a purchase requisition to the Purchasing Agent. Emergency orders are telephoned, and confirmed within 24 hours. A complete record is thus kept of all departmental requests. As the goods are ordered, the purchase order number is placed on the departmental requisition for future reference.

In the case of special materials ordered for the first time, it is customary to call in the Engineering Department of the city together with the department head making the request and to prepare specifications.

All purchase orders are mailed to the vendors at the close of each day's business. The daily clearing of purchase orders has proved satisfactory, for they can then be turned over to the Comptroller and daily posted as encumbrances to the appropriations accounts. The data collected at the time of contacting the sources of supply are then placed on cards in the merchandise file. The successful bidder is shown on the front side of the card, and the unsuccessful bidders and their prices are posted on the reverse side. Business can



THE NEW HERSHEY STADIUM, COVERING 10 ACRES AND SEATING 15,360 SPECTATORS

Its 8 light towers (98 feet high), each of which contains 25 lights of 1,000 to 1,500 watts, floodlight the field with from 200,000 to 250,000 wattage

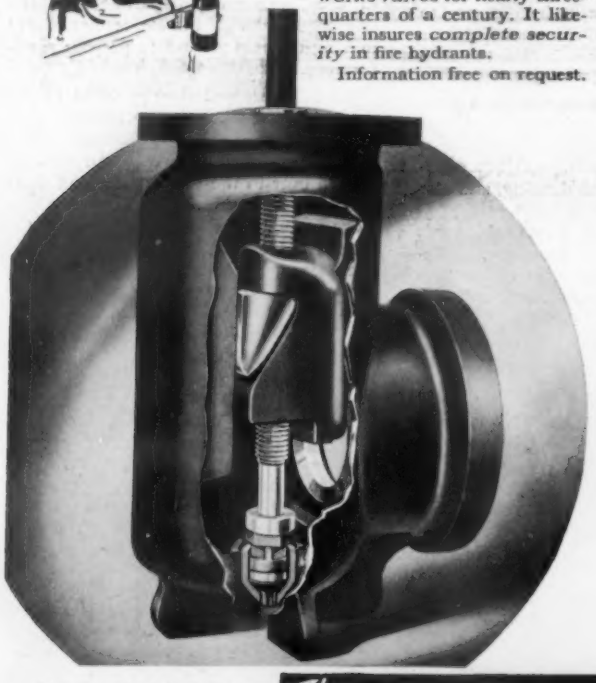
THE BEST Hydrant PROVIDES Proper Drainage

A hydrant must drain *completely* to guarantee constant readiness for service in cold weather. The best hydrant assures proper drainage with drain at the *lowest* point, opening with the last few turns as the hydrant is shut off.

The best hydrant also provides *quick* water with least possible shock, and shut-off without water hammer. It will not flood when broken, because the gate is wedge-locked. It is easily inspected and serviced *without unscrewing anything* below the ground level.

Only the slide gate principle provides *all* these advantages. This principle, developed and perfected by Ludlow, has been the universally accepted construction in all *water works valves* for nearly three-quarters of a century. It likewise insures *complete security* in fire hydrants.

Information free on request.



After gate is fully closed and wedged, drip valve opens assuring complete drainage below gate at lowest point in barrel.

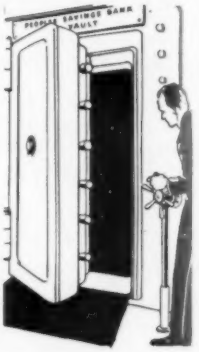
THE BEST Valve PROVIDES Positive Closure

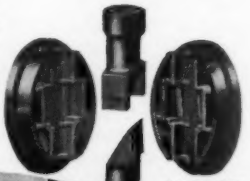
A valve must provide positive closure, even after years of service in the open position. The best valve guarantees this effect with wide, self-releasing 30° angle wedges, and *flexible-action* gates which automatically adjust themselves to seats.

The best valve also assures smooth, positive operation by unwedging and freeing gates *before* raising, wedging them only when they are directly opposite ports. It cleans itself and has no internal guides to cause foul-up; it allows ready replacement of parts through ample tolerances.

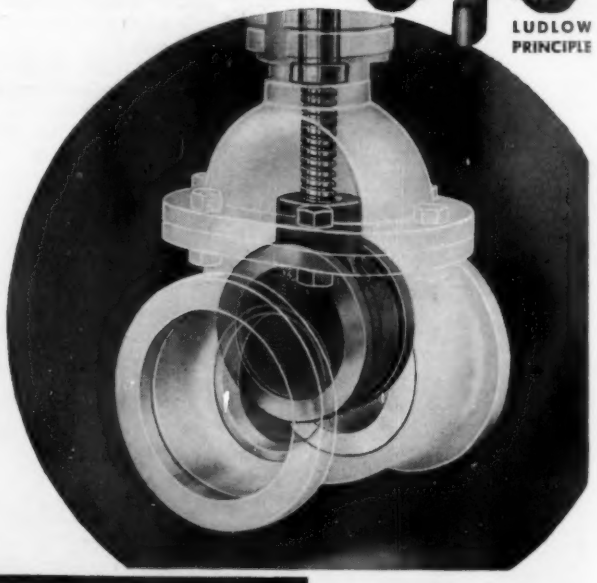
Only the parallel seat, double wedge type slide gate valve provides *all* these essential benefits. This principle, developed and perfected by Ludlow, has been the universally accepted construction in all *water works valves* for nearly three-quarters of a century.

Information free on request.





LUDLOW PRINCIPLE



Ludlow construction compensates for distortion of seats due to pipe strain.

The LUDLOW VALVE MFG·CO· TROY·N·Y· SINCE 1866

then be passed around to several vendors when their prices are identical. If at a later date a vendor is temporarily out of a given stock, other sources of supply are immediately available. This merchandise file continued over a period of several years will enable the placing of repeat orders with a minimum of effort.

The Purchasing Department has also effected a substantial saving by quantity purchase of office and janitorial supplies. A centralized storeroom is open a half-day each week. Goods are kept until needed by the departments. In addition to the quantity discounts obtained, the storeroom reduces the load of the Purchasing Department by eliminating petty orders.

A special stores requisition is prepared in triplicate for the department receiving the goods. A perpetual inventory record (quantity only) is maintained in a visible index record book. Maximum and minimum inventory balances are being determined as rapidly as possible.

SAM W. CULLISON, JR.,
Deputy Comptroller.

Wire Litter Basket, New York City
See "Open Litter Baskets," THE AMERICAN CITY, January, 1939, p. 57

Photograph by Herbert P. Stellwagen, Principal, Soldan High School, St. Louis
Refuse Box on a St. Louis Street

School Pupils Urge Litter Receptacles for City Streets

CHICAGO, ILL.—In Chicago, the Clean-Up-Paint-Up-Light-Up campaign is sponsored by the Community Service Committee of The Chicago Association of Commerce and conducted by the schools in 38 high school areas, which are further divided into approximately 200 elementary school districts.

The campaign lends itself distinctly to physical clean-up, but the by-product of the campaign, which is the building of leadership and good citizenship, is its objective. The campaign provides a most excellent practical laboratory for acts in good citizenship, and training in organization and publicity technic.

In April, eight Chicago high-school pupils visited Waukegan, Ill., where they met the High-School Student Council and mapped ways and means for a clean-up campaign in that city, with the result, says G. Robert Galloway, of the Waukegan Chamber, "It will take us several weeks to dig out from under the rubbish which is awaiting collection."

The youngsters give talks over the radio and before Kiwanis, Lions, women's clubs, improvement associations and churches. One 11-year-old pupil last month took part in a nation-wide clean-up campaign broadcast and was the first youngster ever to speak before the Executive Committee of the Chicago Chamber.

Two interesting developments in this year's campaign were the surveys which were made by pupils in connection with waste-paper baskets on city streets, and garbage cans for householders. Letters were written to other cities asking for information and pictures of baskets. The report of the pupils was presented to the Chamber committee and Fred C. W. Parker, Executive Secretary of Kiwanis International, was appointed chairman of the waste-basket committee to work with the student committee. The report is now ready for presentation to Mayor Ed-

Photograph by Clarence T. Richardson, teacher, McKinley High School, Chicago
Rubbish Box at Monument Place and Market Street, Chicago

Photograph by Alfred Gerdel, Jr., student, Paseo High School, Kansas City, Mo.
A Concrete Trash Container Used in an Outlying District of Kansas City

Three Types of Waste Containers Used in Seattle, Wash.

SPEED MAINTAINER FULLY COVERS ALL DIRT STREETS, KEEPS THEM SMOOTH ALL THE TIME, AT A ***NEW LOW COST*** WITHIN THE REACH OF EVERY CITY BUDGET

Now . . . with the new Allis-Chalmers Speed Maintainer . . . you can keep everlastingly after your dirt streets . . . give them no chance to develop ruts or potholes . . . insure local residents smooth travel at a cost never before possible. First cost is about ⅓ that of heavier grading units, yet working speeds of 3½ to 4¾ miles per hour enable the Speed Maintainer to maintain as much or more miles of street daily . . . and at ½ the operating cost. Fuel consumption is but one gallon hourly. Operation requires only one man. Short turning radius makes it easy to work in narrow streets, alleys or driveways. Travel speed of 9 miles an hour permits working all over town—maintain parkways, smooth airport runways and playgrounds, handle drawbar and belt power jobs, in addition to keeping streets smooth.

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Investigate this low-cost insurance against ruts. Avoid complaints about rough, uneven streets. Ask your Allis-Chalmers dealer to demonstrate. See for yourself . . . on your own streets . . . how the Speed Maintainer can help you maintain more miles of streets oftener . . . and at lower cost.

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ward J. Kelly by the pupils. The garbage-can survey, too, has been most interesting, and the schools, working closely with neighborhood groups, are now making house-to-house canvasses, taking orders for cans and checking results.

It is too early to report the results of this year's campaign, which, in Chicago, is not a "Week" but a year-round effort. An indication of what to expect can be gathered from last year's campaign when the schools alone reported a total of 7,281,644 cleaning, painting, planting jobs; 2,313 campaign talks, 110 community parades, and upwards of three-quarters of a million pledges signed by housewives, business men and storekeepers.

Each year The Chicago Chamber awards 12 trophy cups to the schools doing the most outstanding community work at a Victory luncheon-meeting which is held early in June at a Loop hotel.

ETHEL FOSTER,
Director Clean-Up-Paint-Up-Light-Up Campaign, The Chicago Association of Commerce.

Celebration Dedicates Symbol of City's Wealth and Spirit

BIRMINGHAM, ALA.—This city received nation-wide publicity in local, state and national publications and attracted thousands of visitors by the eight-night Vulcan dedication celebration early in May, a spectacle staged at the base of Vulcan, the huge "iron man of Birmingham."

Vulcan, typifying the vast iron resources and wealth of Birmingham and built from the ore of Red Mountain, on which he now stands overlooking the city from a 150-foot pedestal, was created in 1903 for the St. Louis Exposition. Only a year ago he was placed atop the mountain in a belated but enthusiastic recognition of his value as a sight for tourists and as a veritable city trade-mark. Vulcan is the largest cast-iron statue in the world, and second highest in the world, only the Statue of Liberty being higher.

The celebration dedication was put on by a cast of 1,200 people of Birmingham and over the state, and was professionally directed by William F. Baker, Spectacle Director of the John B. Rogers Producing Co. An amphitheater was built around the foot of the statue to accommodate 5,000 spectators, who witnessed a production Hollywood-like in its manner of showing and proportions. Fifty committees worked handling the various phases of the celebration, which was initiated by the Chamber of Commerce, and is regarded as the greatest civic event ever staged in Birmingham.

The nightly spectacle began with the legend of Vulcan working at his forge on a suit of armor for Achilles. In swift succession episodes followed depicting the Indians of Jones Valley, the coming of the Spaniards to the state, the birth of Birmingham, the overland trek of pioneers, the famous sale of city lots, the colorful Calico Ball of 1873, on down to the machine age. Many choruses took part, trained by local teachers. Lights and flags were everywhere over the large park that surrounds the Vulcan pedestal, and a Queen with attendants took part.

The celebration was as democratic as Birmingham. Labor and industry, which have worked side by side to build the city, met on top of Birmingham's Red Mountain, a mountain of solid miles of ore, to pay tribute to Vulcan, the symbol of their united efforts, and the wealth that has meant the lifeblood of the city that lies spread out for miles in the valley below. Significant was the fact that the Queen who reigned over the festivities was chosen from the rank and file of the people, being a toilet-goods salesgirl. Hundreds of girls vied for the honor of Queen or attendants, and selections were from both socialites and bourgeoisie.

The Birmingham celebration is said to be the first one in history presented to celebrate a symbol of the spirit of a city, held on top of a great mountain with a natural setting and the stars for a canopy. It is also unique in the effort to establish a symbol as a city trademark, as well as to advertise a sight that is expected to draw many tourists in the future. Actual benefits from the celebration in a commercial way were great, all stores holding special sales, and hotels, restaurants and transportation going full force.

ESTELLE MARLOWE.

Left—The Iron Statue of Vulcan Typifies Birmingham's Resources and Wealth. Right—The Queen of the Celebration, and Her Attendants

How the 48 States Tax Motor Vehicles and Gasoline

MOTOR-VEHICLE registrations in 1938 totaled 29,485,680, a decrease of 0.7 per cent below the 1937 figure, according to reports of state agencies to the U. S. Bureau of Public Roads. Registrations consisted of 25,261,649 passenger vehicles and 4,224,031 trucks. These figures do not include 109,761 federally owned vehicles and 257,469 vehicles operated by states, counties, etc. One-third of the states reported small increases in registration, while two-thirds reported slight decreases.

Total registration fees for all vehicles amounted to $340,061,000. Miscellaneous receipts, such as fees for permits and certificates of title, fines, and penalties, brought total receipts to $388,825,000.

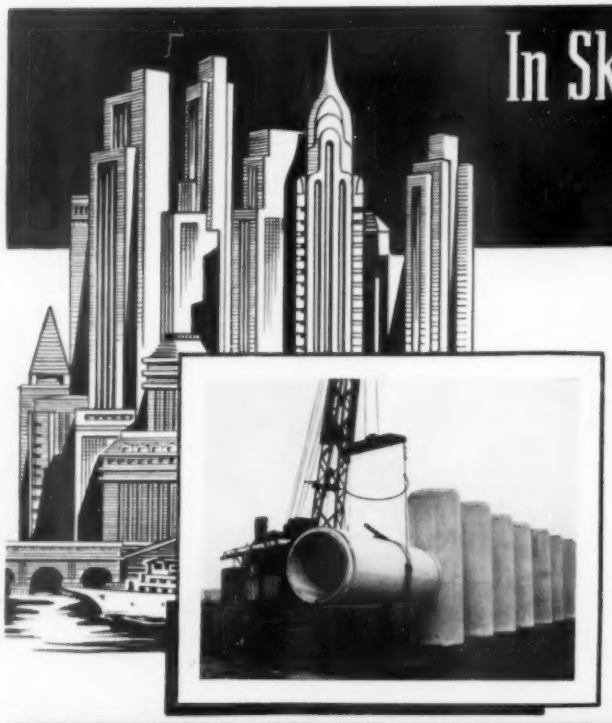
Gasoline consumption in 1938 increased slightly over that for the preceding year, according to statistics collected by the Bureau of Public Roads from state agencies. Net taxes amounting to $766,853,000 were received by the states on 19,610,000,000 gallons of gasoline. Miscellaneous receipts brought the total to $772,060,000. The average tax was 3.96 cents per gallon. No state made a change in tax rate during the year.

Gross collections of the tax amounted to $817,281,000, but refunds and deductions for distributors' expenses amounting to $50,428,000 reduced the net receipts to the above amount.

Refunds of the tax were made on 1,182,618,000 gallons, and exemptions were allowed on 614,290,000.

The following table shows the gasoline tax rate in effect in each state:

STATE	Tax Rate, Cents per Gal.	STATE	Tax Rate, Cents per Gal.
Alabama	6	New Hampshire	4
Arizona	5	New Jersey	3
Arkansas	6½	New Mexico	5
California	3	New York	4
Colorado	4	North Carolina	6
Connecticut	3	North Dakota	3
Delaware	4	Ohio	4
Florida	7	Oklahoma	4
Georgia	6	Oregon	5
Idaho	5	Pennsylvania	4
Illinois	3	Rhode Island	3
Indiana	4	South Carolina	6
Iowa	5	South Dakota	4
Kansas	3	Tennessee	7
Kentucky	5	Texas	4
Louisiana	7	Utah	4
Maine	4	Vermont	4
Maryland	4	Virginia	5
Massachusetts	3	Washington	5
Michigan	3	West Virginia	5
Minnesota	4	Wisconsin	4
Mississippi	6	Wyoming	4
Missouri	2	District of Columbia	2
Montana	5		
Nebraska	5		
Nevada	4		



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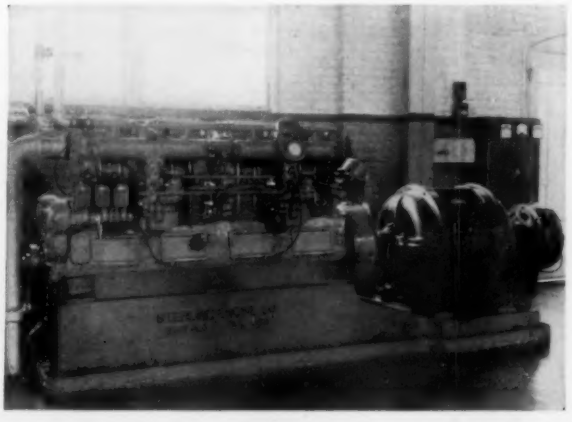

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The American Institute of Planners Presents

'The City'

ITS production financed by a grant of $50,000 from the Carnegie Corporation of New York to the American Institute of Planners, a unique motion picture had a preview at the National Conference on Planning, in Boston, on May 15; its formal premier at the New York World's Fair on May 26; and will be made available later in the year for showing in commercial theaters and before civic groups throughout the United States.

This "documentary" film of four reels (running-time 44 minutes) is entitled "The City." In the field of city and town planning it has a dramatic and human-interest appeal which some critics have proclaimed superior to that of "The River" in the field of regional and rural planning. The theme is suggested in the Foreword:

"Year by year our cities grow more complex and less fit for living. The age of rebuilding is here. We must remould our old cities and build new communities better suited to our needs."

As indicated by the typical scenes here reproduced, "The City" contrasts vividly the best and the worst of urban development in the United States. It tells the story of early American urban life in a charming New England village; of the coming of factory and mining towns with jerry-built houses clinging to barren, gullied hills, midst the din and smoke and grime of the belching stacks of mills and locomotives. Then the camera dramatizes the hurrying crowds and confusion of the modern metropolis. Wall Street is shown jammed with people. Suddenly, as the bells of Trinity Church toll the Sunday hour, the same street is shown deserted, and the scene jumps to an endless stream of cars plunging along ill-planned highways to escape the city. The maddening Sunday traffic jams, the hazards of unprotected two-way traffic, the defacement of the landscape by ugly billboard signs, the strain of stop-and-go traffic, and the danger of roads crossing at the same level, are all shown.

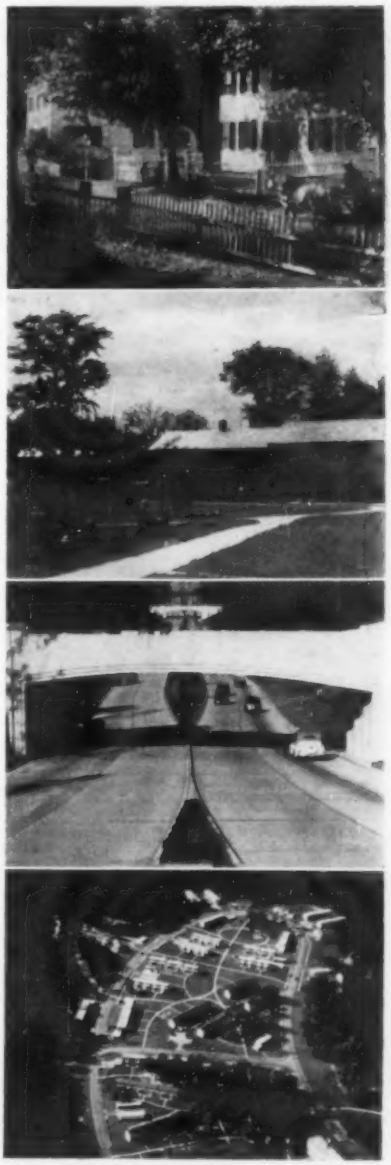
In the final sequence we see well-planned parkways leading to the "green city" that foresight and intelligent planning make possible. This is not a visionary city of some distant future, but parts of actual planned communities as they now exist, each displaying some element of the future city that has already been realized. Traffic flows smoothly on landscaped, protected highways; people work in clean, airy, sunlit factories; children and adults alike play in the sun and air; homes are bright and clean, and the houses blend into the green landscape. The camera picks out details of housing, of planning, of underpasses, of parks, of protected roadways, of safe recreational fields, as it shows the healthful, orderly life that is possible in a community designed with forethought, and points out the objectives to be sought not only in the building of new communities but in the remoulding of our present cities. As the cleanliness and efficiency of the green city is contrasted with the dirt and disorder of the industrial city and the metropolis, the film ends with scenes of happy, laughing children playing beneath a sunlit sky.

For the production of "The City," the American Institute of Planners committee which received the grant from the Carnegie Corporation organized a non-profit company, Civic Films, Inc., with a board of directors consisting of Frederick L. Ackerman, Tracy B. Augur, Russell Van Nest Black, Harold S. Buttenheim, Robert D. Kohn, Lawrence M. Orton and Clarence S. Stein.

Mainly responsible for the technical production of the film were: commentary and scenario, Lewis Mumford, Pare Lorentz and Henwar Rodakiewicz; supervisor, Oscar Serlin; photography, Ralph H. Steiner and Willard Van Dyke; music, Aaron Copland and Max Goberman; narration, Morris Carnovsky; film editing, Theodore Lawrence.

For information regarding local showings of "The City," address Clarence S. Stein, President, Civic Films, Inc., 56 W. 45th St., New York.

Shall We Tolerate Conditions Like These?



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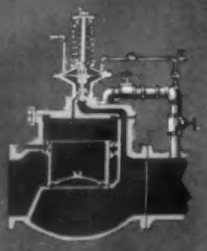

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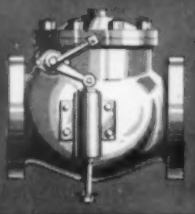

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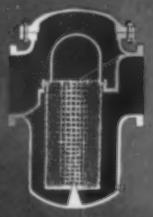

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Public Land Policy for Community Reclamation

From a Paper on "Housing for All the People," Presented at the National Conference on Planning, in Boston, May 15, 1937

By Albert Mayer
Architect and Community Planner, New York

ACCOMPANYING a program of community reclamation, we must have a comprehensive land policy, in two parts:

1. Purchase of lands by the municipality or county or housing authority much in excess of the individual project's needs, with the eventual idea of ownership of a sizable proportion of all the land—as has been done in English cities and elsewhere.

2. A much broader and more drastic control of land use and intensity of development than any present zoning laws that I know of.

Without these two tools or weapons, no city plan, however good on paper, will ever be carried out in its fundamentals, though it may build its roads and bridges and health centers. Probably public land *control* must come before public land acquisition can get very far. If our new zoning is predicated on uses and use intensities that correspond with realities rather than outmoded hopes of over-expanding land use by industry and houses—the new realities being that efficient industrial and commercial planning will not require more space per unit product, and the population is approaching stabilization—we shall find that our cities have plenty of land, that intensities must be reduced, that, therefore, land has lower value than its present prices, and public acquisition will be easier. This will reduce *prices* but not land *values;* it will simply take account of present real values.

Public land acquisition might start by a policy of tax foreclosures and acquisition by the city or county. This is a tool right at hand that is scarcely ever used. Another weapon which is still to be forged in most places is the right of excess condemnation in connection with housing projects. Another avenue to be explored is the allocation of part of housing funds to purchase of excess land. Another essential is introduction of the principle that where substandard houses exist, the value of the land only be considered by the courts in cost of acquisition.

This acquisition of land need not stifle private enterprise, only private speculation. The land not required for present or future public projects should be leased on long terms to private builders.

Control of land use by creative zoning should not mean simply restriction as at present, but should create a vital pattern. It should cover not only the city itself, but by agreement should include rural zoning around the city.

The transformation of the city from a 25-foot past to the large-scale future should not only be a government matter, but should proceed from private nuclei as well. You have probably all heard of Arthur C. Holden's scheme of property pooling. Under this scheme, blocks of property owners—most of whose properties are derelict and are economic losses—would form neighborhood corporations in which the individual owners would become stockholders, so that orderly large-scale management and redevelopment could proceed. I don't know how far this will go. A housing fund to which I am technical advisor is actually trying this out by supplying the initial funds required for legal agreements, appraisals, basic plans, to see whether the thing can be started. An important advantage of the idea is that it mobilizes frozen single equities, so that practically no new money would need to be found for land purchase. Another potential advantage is that the value of land would find its own level, for, instead of any arbitrarily assigned value which is simply a past guess, the new value would be what is left as return from a suitable economic development.

To discourage the runaway suburb and create the satellite town, two things would be necessary: first, a policy of the city not to extend its facilities to areas arbitrarily chosen by speculators, but only to those whose plan and location conform to the satellite town's requirements; second, an agreed policy with the surrounding or adjacent counties on cooperative plans and policies of land use.

Now if we start accomplishing these things, we are going to have a frightful howl from professional real estate, because we are proposing nothing less than a change from land speculation to land use. Our support has got to come from home owners and tenants, from an awakened public. But we are also going to get howls from municipal officials; because, owing to our system of taxation, they have a vested interest in maintaining the present imaginative high land prices for assessment purposes. We need a new tax system to accomplish our objectives in their entirety, but in the end we are going to have cities that need less taxes to run on.

What I've described up to now will produce rational, efficient cities, lower running expenses, and less of arbitrary and speculative change. This means a pleasanter life in stable communities, lower eventual taxes, lower interest rates, and lower amortization rates corresponding to greater safety. Less rent for the people to pay.

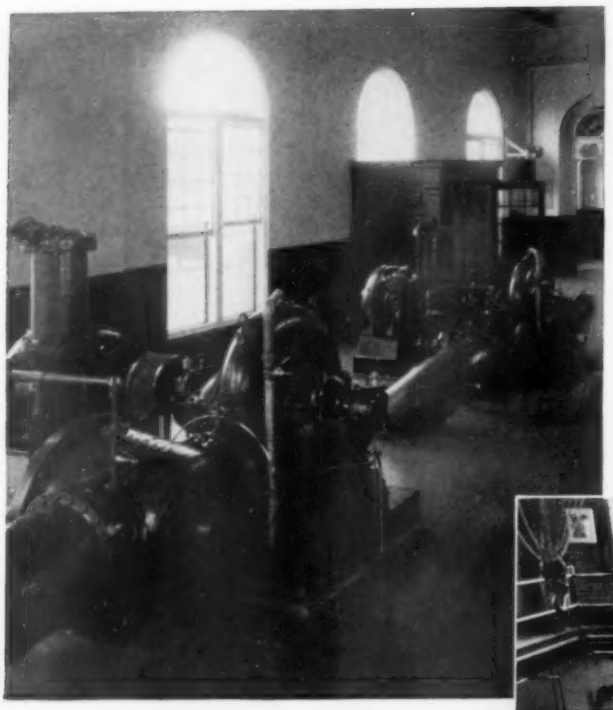
229 Cities Now Have Public Housing Authorities

THE 229 public housing authorities now operating in cities represent a 400 per cent increase over those in existence a year ago, a survey by the National Association of Housing Officials shows.

Ninety-eight of these local authorities have contracted for $377,876,000 in loans from the United States Housing Authority, to build 181 housing developments. This is an increase of more than $56,000,000 since the first of the year and comes within $275,000,000 of the total funds ear-marked from current Federal loans for public housing. In addition, approximately 15 cities where authorities had been set up in 1938 were shown to have property surveys under way preparatory to plans for low-rent housing projects. Among these cities are Denver, Colo., Key West, Fla., Muncie, Ind., Savannah, Ga., Great Falls, Mont., and Long Branch, N. J. Most of the cities are financing their 10 per cent share of project costs through bond issues, according to the survey. The annual local subsidy necessary under terms of the United States Housing Act is usually in the form of tax exemption. It must be at least one-fifth of the annual Federal contribution.

The local and Federal housing authority estimates of building costs were found to allow a 15 to 25 per cent margin of safety according to the first construction contracts awarded. Biggest problems, the survey disclosed, are acquiring sites at prices low enough to keep project costs down, and working out policies of tax exemption satisfactory to the cities.

The Association's Housing Yearbook of 1939 will soon be issued.



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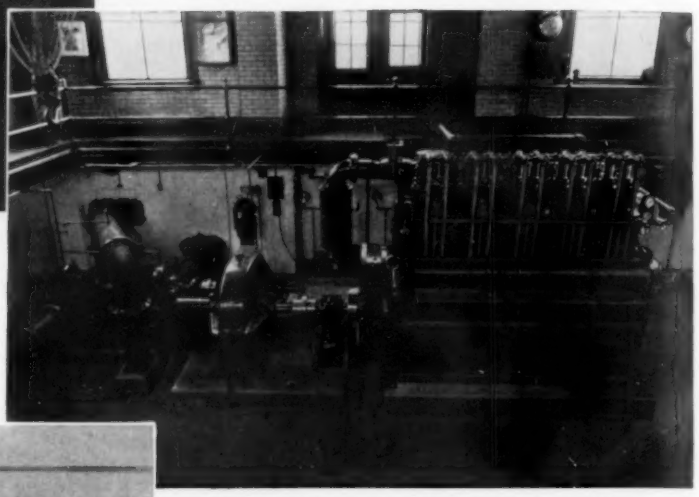

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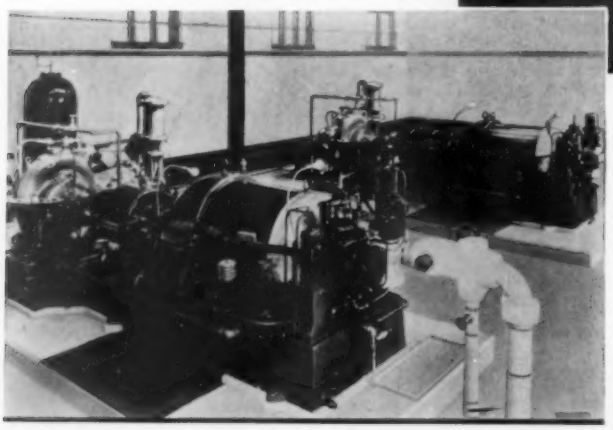

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See the Worthington-Gamon advertisement on page 23.

Speedier Utility Rate Decisions Made Possible

By H. M. Olmsted
Consulting Engineer, Illinois Commerce Commission

ADJUSTMENT of public utility rates prior to the conclusion of long-drawn-out rate cases was facilitated by the United States Supreme Court through its decision on April 17 in the case of *Driscoll et al. v. Edison Light and Power Co.*

An act of the Pennsylvania Legislature in 1937 empowered the Public Utility Commission to establish temporary rates for a public utility company under investigation, pending the final determination of the proceeding; such temporary rates to be sufficient to return to the company not less than 5 per cent upon the original cost, less accrued depreciation, of the physical property used and useful in the public service. If the rates finally established prove to be higher than the temporary rates, the company is to be given a temporary increase above the final rates as otherwise fixed.

The company contended that the statute was unconstitutional, although in applying it the Commission had set the temporary rates for the Edison Company high enough to provide 6 per cent, not merely upon the original or actual cost, less depreciation, but upon a much larger figure, in determining which it gave consideration to reproduction cost and other possible elements of value. A rate reduction of $435,000 per annum was ordered. A Federal District Court declared the Commission's order to be unconstitutional. The case was appealed by Chairman Driscoll and the other members of the Commission, and on April 17 Mr. Justice Reed delivered the Supreme Court's opinion, reversing the lower court and upholding the statute as interpreted and applied by the Commission.

This approval of temporary rates is important and useful as an aid to speedier rate adjustments. The Court's opinion, however, contains an element of danger in its treatment of original cost, for it refers, in an incidental connection, to a maximum "original cost rate base" which makes no allowance for depreciation. An examination of the Commission's decision in *Public Utility Commission v. Edison Light & Power Co.*, 21 P. U. R. (N. S.) 328, 335, reveals that this same company had built up a depreciation reserve of $2,231,901 against a total property cost, according to the Commission, of $4,600,000. The use of undepreciated original cost gives the company the full benefit of such a reserve, even though it has been accumulated out of revenue contributed by the consumers.

An undepreciated rate base is fair to the consumers only in case the annual provision for depreciation as an operating expense is on a sinking-fund basis, whereby the accumulations for depreciation purposes are increased by compound interest thereon, thus reducing the amount which it is necessary to provide as an operating expense. The Pennsylvania Commission, however, had not applied the sinking-fund principle. It allowed over 3 per cent of the cost of the property as an annual depreciation provision in operating expenses, while deducting only 11 per cent from the cost of the property for depreciation that has already occurred. This was a meager enough reduction, in view of the large reserve; but the use of original cost without any deduction at all for depreciation gives the consumers no credit for their contributions for depreciation in advance of the final retirement of the various items of property, unless annual contributions are reduced by being allowed to accumulate compound interest.

In view of the increasing emphasis on prudent investment as an adequate rate base which does away with the expense and delay of reproduction cost appraisals, it is important to recognize that an investment rate base should not include amounts derived from he consumers instead of from the investors, or, if undepreciated original cost is used, the annual allowance for depreciation should be reduced to a sinking-fund basis.

Recent City Manager Appointments

JAMES M. BUCKLES has replaced Edward Newton as City Manager of Kissimmee, Fla.

Elwyn C. Boyden of Walpole, Mass., has been appointed Municipal Manager of Middlebury, Vt. This fills the vacancy created by W. E. Brackett's promotion to Houlton, Maine.

R. B. Fuller has been appointed Manager of Altavista, Va., to fill the vacancy created by Mr. Woodbury's promotion to Harrisonburg.

Robert D. Heitsch, Jr., of Pontiac, Mich., has been appointed City Manager of Davison, to replace S. H. Hampton.

Richard T. Linnell has been appointed first City Manager of Ludlow, Vt.

P. Theodore Olsson has replaced Herman H. Karrow as City Manager of Columbia Heights, Minn.

George Lazell, head of the filtration plant, has been appointed City Manager of Big Rapids, Mich., to succeed Dan H. Vincent. Mr. Vincent has served as Manager since 1918.

L. B. Davisson has replaced Draco Dodrill as Manager of Clarksburg, W. Va.

Clarence E. Ridley,
Executive Director, International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from May numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$100,000	Salem, Mass., Relief	1.25	1-10 Ser.	1.04
200,000	Quincy, Mass., Street Construction	1.25	1-10 Ser.	1.14
480,000	Columbus, Ohio, Delinquent Tax	1.25	3.75 Avg.	1.15
160,000	Medford, Mass., Relief	1.5	5.25 Avg.	1.36
100,000	Evansville, Ind., Flood Protection	2	10.66 Avg.	1.84
350,000	Youngstown, Ohio, Airport	2.25	6.5 Avg.	2.07
130,000	Cumberland, Md., Water Improvement of 1939	2.25	20	2.12
200,000	North Kingstown, R. I., Water	2.25	16.75 Avg.	2.20
2,500,000	Cleveland, Ohio, School	2.5	13.75 Avg.	2.34
500,000	Cranston, R. I., Sewerage	2.5	17.16 Avg.	2.35
150,000	East St. Louis, Ill., Park	2.75	18 Avg.	2.73
999,000	Toledo, Ohio, Deficiency	3	8 Avg.	2.86
115,000	Huntsville, Ala., Public Improvement Refunding	4	20.66	3.57

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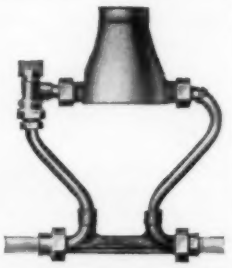

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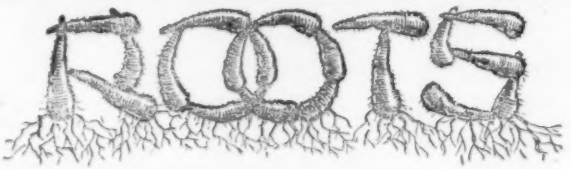

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Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 60 John St., New York

Paul L. Green, Chairman; George W. Barton, William C. Brandes, Edward H. Eames, Ralph W. Eaton, William G. Eliot, III, James R. Guthrie, Harry C. Koch, E. B. Lefferts, Miller McClintock, William R. McConochie, Theodore W. Matson, Robert A. Mitchell, John B. Moriarty, William A. Van Duzer, Ralph F. Michel

Do Something for Pedestrians

They need modern street light, signals that suit conditions, and knowledge of traffic facts

By ROBERT A. MITCHELL
Traffic Engineer, Philadelphia, Pa.

RECORDS from numerous cities show that between 65 and 75 per cent of the pedestrian fatalities and over 50 per cent of the accidents occur during hours of darkness, and the semi-urban zone adjacent to the business district is the one that produces the highest percentage.

These same records show that between 50 and 55 per cent of the pedestrians killed are over 55 years of age, yet they represent less than 15 per cent of the population.

A study in Connecticut showed that over a five-year period less than 5 per cent of the pedestrians of driving age who were killed in traffic accidents were licensed drivers.

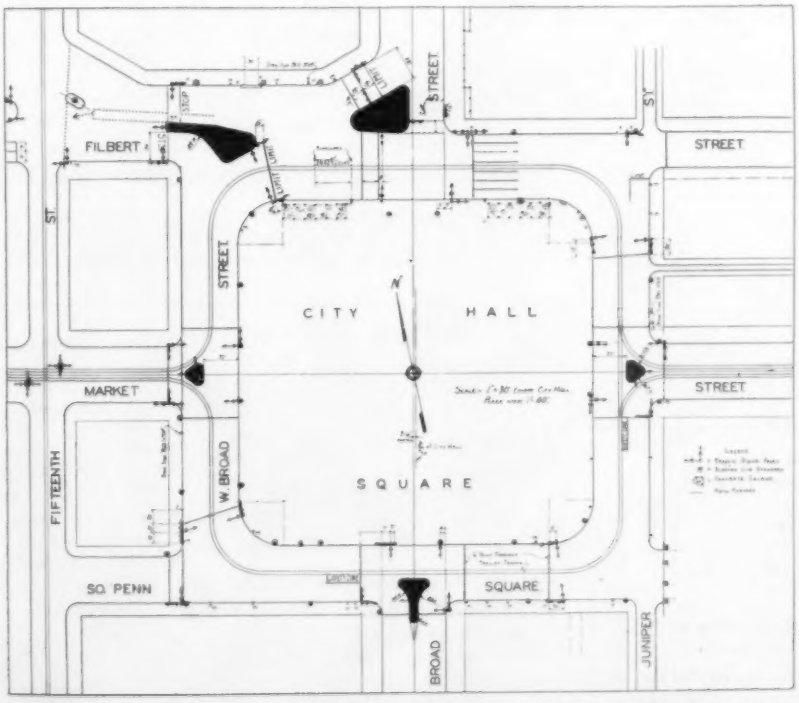
Studies made in Dallas, Detroit, Philadelphia and elsewhere indicate that the pedestrian fatality rate is much higher among people of foreign extraction and those in poorer financial circumstances.

There is evidence that pedestrians carrying too much liquor are a traffic menace.

Data also show that it is much safer to cross at intersections than to jaywalk, and that the rate of pedestrian fatalities and injuries is much lower in those cities where pedestrians obey traffic-signal indications.

Knowing these facts, it should not be difficult to find methods for making progress in pedestrian protection; but unfortunately, practically all of these remedial measures require money.

Engineering, Enforcement and Education, are the trinity of traffic control and safety, and in that order the remedies for pedestrian hazards will be discussed.



Traffic Islands Have Nearly Eliminated Pedestrian Deaths in City Hall Plaza, Philadelphia

Street Lighting

The obvious answer to the night-accident problem is adequate street lighting on the main traffic arteries, particularly in suburban zones, so vehicle drivers can clearly see pedestrians in the roadway at night; automobile headlights do not seem adequate for this purpose. Officials of the state of New Jersey have been so impressed by the reduction in night accidents brought about through better street lighting, that it is being provided by the state on state highways for many of the urban communities. Detroit, Mich., Hartford, Conn., Los Angeles, Calif., Syracuse, N. Y., and other cities have found it pays in accident reduction, and several small cities in Pennsylvania have installed modern lighting with good results. Public officials who are interested in procuring better street lighting for their communities should consult lighting experts for actual costs, but a fairly close estimate is $2,000 per mile, for which they can expect at least a 35 per cent reduction in night pedestrian accidents and fatalities.

Many persons cross the street between intersections, though statistics prove it is much more hazardous than crossing at intersections. Sometimes it is done to save time, but mainly because crossing at the intersections seems more confusing and dangerous owing to turning vehicles, more traffic, the seeming complexity and delay of traffic-signal operation, and the lack of *adequate markings* to keep vehicles from encroaching on the crosswalk. They are particularly handicapped in trying to cross wide streets, and getting on and off street cars, unless special protection is provided. In general, the sidewalk is for the pedestrian, the highway for the motor vehicle and the intersection for both. The solution seems to be to make the intersection as safe and convenient as possible for pedestrians and motorists alike.

At unsignalized intersections, the marking of crosswalks for pedestrians, stop lines for vehicles, and the building of proper islands where needed, have done much to improve the situation. Motorists should be required to yield the right-of-way to pedestrians at all times.

Traffic Signals

At signalized intersections, marked crosswalks and stop lines also are necessary. In addition, there should be a signal indication, preferably a lens with the word WALK to be illuminated only when it is safe to cross the street, directly in front of every pedestrian crossing the street. The time cycle of this signal should not be too long, not over 50 seconds, for a two-way

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intersection. If turning vehicles seriously interfere with the pedestrian movement or cause many accidents, they should be regulated by a police officer, or made under a separate signal indication, or prohibited; and pedestrians should be required to obey traffic signals—a pedestrian's personal liberty is no more sacred than that of a motorist.

In the operation of traffic signals with WALK lens, at the usual two-way intersection, the WALK lens should be illuminated at the same time the GREEN or "GO" lens is lighted. It should be darkened prior to the lighting of the RED lens the number of seconds that is required for a pedestrian to cross the roadway at a rate of about 4½ feet per second. A most efficient type of WALK lens has been designed by the Standards Committee of the Institute of Traffic Engineers and is now being manufactured by traffic-signal companies.

Islands

It is hazardous for pedestrians to cross streets over 50 feet wide, unless islands are provided where they can safely stop as vehicle traffic moves. On streets with street cars, suitably designed safety zones will serve such a purpose, but on other streets the islands should be designed so as to channelize and not hinder the progress of motor vehicles. It is also very important that these islands be adequately lighted at night, so they will be perfectly visible to motorists.

Enforcement

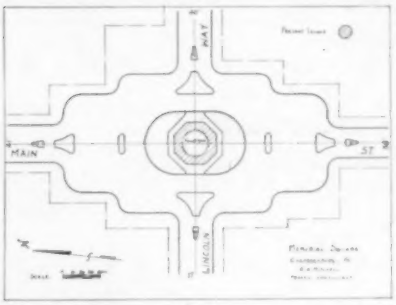
Should pedestrians be punished the same as motorists for not obeying traffic signal indications? That is a moot question today. From a safety standpoint, it has been shown that pedestrian fatalities and injuries are proportionately fewer in those cities where there is obedience than in those where no control is exercised. Three arguments have been used against pedestrian control: (1) that it interferes with personal liberty; (2) that it seems foolish to arrest a person for crossing the street; (3) difficulty of enforcing the regulation.

However, is the personal liberty of pedestrians any more sacred than that of motorists? The intersection is for the use of both. Is it not customary to resort to enforcement to protect people from themselves? Even people who try to commit suicide are arrested. Has it been necessary to punish every violator to keep people from breaking the law?

Requiring pedestrians to obey traffic signals makes them "traffic conscious" and more interested in the problem, just as a player in a game is usually more interested than a spectator. This should cause them to think about traffic rather than their personal problems when crossing any thoroughfare.

We can also help the pedestrians by enforcing certain actions of vehicle drivers; that is, insist they yield the right-of-way to pedestrians at intersections where it is due them, and if turning vehicles seriously interfere with pedestrians, regulate them by police control or prohibit them if necessary.

The speed of motor vehicles should also be kept within sensible limits; particularly



Author's Plan to Facilitate Travel in Memorial Square, Chambersburg, Pa., 141,000 Population

on streets where the pedestrian accident rate is high. Providence, R. I., and Worcester, Mass., have obtained excellent results in reducing accidents by decreeing a 25 mph speed limit in certain sections of the city and seeing that it is enforced.

Education

Safety education is probably the most effective means of reaching the pedestrian, particularly the older group, the poorer classes, and foreigners. It has been mainly through safety education in the schools and recreation centers that there has been such a remarkable reduction in accidents to children of school age.

Very little progress has been made in adult pedestrian education, but attempts are being made to devise an effective program. In Dallas, Texas, the Pedestrian Committee of the Citizens' Traffic Commission has found that the best results are obtained with selective educational programs conducted in certain sections of the city inhabited by people of lower incomes or foreign extraction and fathered by the recognized leaders of the community. In the foreign neighborhoods the program was in the language of the city, and pamphlets were issued giving instructions against the unsafe practices most commonly found among them. Recent accident records indicate that this program is producing good results.

In Philadelphia, a similar educational campaign is being carried on by a WPA educational project working under an Advisory Committee of persons familiar with the traffic problem. Prominent business and social leaders in different neighborhoods which, although they are a part of the whole city, have certain distinguishing business, social and racial characteristics which make them groups unto themselves, have been selected as sponsors of these neighborhood safety campaigns. These leaders not only lend prestige to the meetings, but donate funds for the printing of posters and notices advertising the sessions, and see that they are adequately displayed and distributed. Regular weekly meetings to reach adults have already started, in which stress is laid on the points brought out in the first part of this article; that is, the need for special care at night, the need for older people to exercise more caution in crossing streets, the dangers of too much alcohol, an explanation of the responsibility of the motorist and the pedestrian, and an endeavor to make them both car-minded.

There is no question that the pedestrian must be given more consideration by traffic officials. This article indicates some of the more important facts connected with the problem.

Why Not for All Grade Crossings?

Photograph by courtesy of General Electric Co.

WHILE the separation of opposing traffic flows and the elimination of grade crossings help to abolish collision accidents, these methods are not always feasible and are always expensive. Where it simply cannot be done this year or next, the grade crossing should be brightly lighted. Sodium-vapor lamps have been quite successful for this purpose, because of good visibility and the distinctive golden color tending to put the driver on the alert.

The accompanying picture shows how a sodium safety light has been added to other protective measures on the Prairie Avenue main-line crossing of the Chicago, Burlington & Quincy Railroad near the village of Brookfield, Ill. Mounted 25 feet above the pavement on an ornamental concrete pole located 30 feet from the crossing, the sodium luminaire extends out over the roadway and provides adequate visibility of the entire crossing for drivers approaching it from either side.

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Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning" and of
"The Master Plan"

Zoning Ordinance—Variance

KENTUCKY.—*Bosworth v. City of Lexington*, 125 W. 2d. 995 (Court of Appeals, February 21, 1939).—The section of the municipal zoning ordinance requiring that an extension of a non-conforming use of buildings must be undertaken within five years of the enactment of the ordinance did not limit the general power conferred by statute on the board of adjustment without any limitation on time to grant a variance subject to conditions.

EDITOR'S NOTE.—"The conditions are not limited to the scope of the police power. A common condition is that the side of a building shall be constructed with face brick." These conditions "may have an esthetic quality."—Bassett, "Zoning," pp. 128, 129.

Zoning Ordinance — Variance—Esthetics

KENTUCKY.—*Selligman et al., Board of Adjustments and Appeals v. Western and Southern Life Insurance Co.*, 126 S. W. 2d, 419 (Court of Appeals, December 16, 1939).—A Louisville zoning ordinance permitting storage garages in certain districts only if constructed as a part of the main building is not unconstitutional. In granting a variance from the ordinance, the Louisville Board of Adjustments and Appeals, could, as a condition to granting the variance, impose reasonable restrictions which were not contained in the zoning ordinance and which the Board did not have power to impose originally. The granting by this Board of a variance so as to permit the erection of a garage on the lot next to an apartment building on condition that the architecture of the front of the garage be coordinated with the architecture of the apartment building, that there be only an alley entrance to the garage, and that certain landscaping be done, is not arbitrary or unreasonable.

Building Code—Permit—Private Restrictions

MISSOURI.—*State ex rel. Folkes v. Welsch*, 124 S. W. 2d, 636 (St. Louis Court of Appeals, February 7, 1939).—This action is mandamus to compel Welsch, Building Inspector of the city of St. Louis, to issue to Folkes a permit for the erection on his land of a gasoline filling station. The issuance of the writ is opposed by the owners of land in the same subdivision as that in which Folkes' lot is situated, on the ground that, as they allege, there are private restrictions upon this tract, forbidding the erection on it of such a station.

But this Court holds that the allegation of third parties as to existence and validity of such private restrictions is no bar to the permit or mandamus to compel the Commissioner to issue it. It is true that mandamus does not lie to compel the doing of a wrong; but in this case there is no proof that a wrong would be committed, for there is no proof of the fact that the restrictions exist or are valid in law and would prevent the erection of a gasoline station at this location. In order to urge such a defense here, the objecting landowners should have brought an action to enforce the alleged covenants, in which all parties could testify. The building inspector has no judicial authority, and cannot be expected to pass upon such questions.

Non-conforming Use—Damage 75 Per Cent by Fire

NEW YORK.—*Kober v. Bedell*, 254 App. Div. 584, 3 N. Y. S., 2d, 108 (March 25, 1938).—The provision in the zoning ordinance that a non-conforming building damaged by fire to the extent of more than 75 per cent of its value shall not be repaired or rebuilt except for a conforming use is valid and constitutional.

Variance—Private Restrictions

TENNESSEE.—*Bubis v. City of Nashville*, 124 S. W. 2d, 238 (Supreme Court, February 4, 1939).—A tract of land outside the city limits was subdivided, and the lots sold subject to private restrictions under which most of it was set aside for one- or two-family residences, but on the lot purchased by one Colley, an apartment was allowed. Later the city limits were extended to include the subdivision, and under the city zoning ordinance Colley's lot was placed partly in a district where apartments were permitted, partly in a district where they were forbidden. Colley applied for a permit for an apartment house on his lot and it was refused him because part of it would be in a district where apartments were not allowed. He thereupon appealed to the Board of Appeals and was granted a variance allowing him to build his apartment, on the ground that the platting of the lot for an apartment and the later proceedings with relation thereto was a practical difficulty and hardship from which he was entitled to relief. From this action of the Board, owners of nearby property restricted against apartments appealed to this Court, which, in this case, sustains the action of the Board overruling the appeal.

Zoning Ordinance—Variance

TEXAS.—*Harrington v. Board of Adjustment of City of Alamo Heights*, 124 S. W. 2d, 401 (Court of Civil Appeals, January 9, 1939).—The zoning ordinance established five residence districts from which filling stations were excluded, and made the rest of the city a business district. The Board of Adjustment granted R. D. Jones, as a special exception, the right to erect a filling station on his lot in a residence district. From that action, the plaintiff, Harrington, owner of a residence in that district, appealed to this Court, which sustains the appeal, overruling the action of the Board, for the reason that in effect, instead of granting a variance from the letter of the ordinance, the Board in fact created a new business district. This is an exercise of the legislative power, vested in the City Council, which cannot be delegated.

Filling Station—Approaches

WEST VIRGINIA.—*Sudduth v. Snyder, Mayor of City of Bluefield*, 200 S. E. 55 (Supreme Court of Appeals, December 6, 1938).—The plaintiff is the owner of property upon a portion of which, under the zoning ordinance of the city, he has the right to erect a filling station, but upon another portion he cannot do so, since it is within 150 feet of a dwelling, where the erection of such a station is forbidden. He is asking for a permit to erect the station itself on that portion where such stations are allowed, and to construct approaches to it on the portion where such stations are forbidden. The city claims that the filling station proper and the approaches to it must be considered as one project, and that therefore the city was justified in refusing to grant the permit as asked for. The Court, however, rules that the permit must be granted. The landowner's right to construct the filling station on one portion of his property includes the right to construct necessary approaches to it on the other portion. The ordinance controlling the location of the filling station was based on the theory of protection against fire, and was intended to apply to filling stations proper, and not to their approaches, which are not a fire hazard.

Trailers

The January, 1939, number of "A Planning Forum," published by the Massachusetts State Planning Board of Boston (Vol. III, No. 1) contains an article on "Trailers and Trailer Camps," being a summary of a special report of the Board on this subject.

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Court Decisions Affecting Municipalities

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held not liable for injury in night-time to pedestrian who stepped into sewer trench while walking outside usual path of travel (Pennsylvania Superior Court: *Bilheimer v. City of Bethlehem*, 4 Atl. 2d, 564).

City held negligent in permitting ice ridges six or seven inches high to remain eight days or longer on a sidewalk, rendering city liable to pedestrian who slipped and fell (Pennsylvania Superior Court: *Canfield v. City of Philadelphia*, 4 Atl. 2d, 605).

Judgment against city for injury to employee struck in eye by piece of rock while breaking rocks was set aside for the trial judge's error in instructing jury that city was bound to warn the employee of the danger of using the flat-faced hammer furnished him instead of a round-faced hammer (Missouri Supreme Court: *Choate v. City of Springfield*, 124 S. W. 2d, 1127).

City held liable for injury to pedestrian who, in night-time, fell into ditch where unlighted crosswalk was narrower than remainder of crosswalk and was without guard-rails (Kansas Supreme Court: *Blankenship v. City of Caney*, 87 Pac. 2d, 625).

Statutory notice of intention to sue for automobile accident held fatally defective for a variance of a quarter of a mile between the place of the accident stated in the notice and the actual place, and not cured by proper notice served by another person injured in the same accident (Illinois Appellate Court: *Keller v. Tomaska*, 19 N. E. 2d, 442).

City held not liable for injury to pedestrian who fell in stepping down six inches from sidewalk to parkway (Illinois Appellate Court: *McKinley v. City of Chicago*, 19 N. E. 2d, 452).

City held liable for injury to taxicab passenger due to cab's striking sharp depression in street (Illinois Appellate Court: *Rather v. City of Chicago*, 19 N. E. 2d, 451).

In a motorist's action against city for damage resulting from collision with rope stretched across a street to indicate street was undergoing repairs, the rope itself held insufficient warning, but jury could find that the rope, plus a cement sack and box, constituted adequate warning under the circumstances (Mississippi Supreme Court: *City of Meridian v. Moody*, 186 So. 649).

Annexation Proceedings

Under circumstances, ten years' delay in challenging the validity of proceedings extending city boundaries held to bar suit (Oklahoma Supreme Court: *Peerless Realty & Operating Co. v. City of Tulsa*, 87 Pac. 2d, 118).

Civil Service

Applicant for civil service position held entitled to restoration of standing on eligible list given him after examinations were graded but diminished on an unauthorized regrading of the examination after the identity of the applicants had become known (Washington Supreme Court: *State v. Mullin*, 87 Pac. 2d, 280).

Commission Government

In city under commission form of government, resolution transferring supervision over the department of public welfare to the mayor and board of commissioners held void, under rule that duties should be distributed to departments (New Jersey Supreme Court: *Laidlaw v. Board of Commissioners of Town of West Orange*, 4 Atl. 2d, 405).

Condemnation Proceedings

Leasehold owner held entitled to damages resulting from construction of a viaduct that rendered the property almost inaccessible (Nebraska Supreme Court: *James Poultry Co. v. Nebraska City*, 284 N. W. 273).

Debt Limits

Debts contracted by city in excess of constitutional limit for following stated purposes held not within rule that the limit is inapplicable to necessary and mandatory expenses: services of driver of automobile used by officials in viewing proposed improvements, etc.; maintenance of employment office; operation of sanatorium for tubercular persons; expense for membership in municipal associations and for codifying ordinances; contribution to humane society. Expenses held not necessary merely because authorized by city's charter (Washington Supreme Court: *Goff v. City of Seattle*, 86 Pac. 2d, 222).

Finances

Village held empowered to sue Treasurer and his sureties to restore misapplied funds belonging to special assessment fund (United States Circuit Court of Appeals, Seventh Circuit: *Village of Brookfield, Ill., v. Pentis*, 101 Fed. 2d, 516).

Hospitals

County bond issue to aid construction of city hospital held not invalid as improper gift or lending of credit by county (Tennessee Supreme Court: *Dodd v. Roane County*, 124 S. W. 2d, 953).

Licenses

Statutory authority to impose license taxes on "merchants" held not to extend to a petroleum company manufacturing products for wholesale, although occasionally sales were made to consumers (Oklahoma Supreme Court: *Magnolia Petroleum Co. v. City of Broken Arrow*, 87 Pac. 2d, 319).

Annual license tax of $6 imposed against professions held invalid as being exorbitant (Florida Supreme Court: *Smith v. City of Tampa*, 186 So. 674).

Vehicular delivery service afforded customers by a business establishment situated outside municipality held not to support imposition of license tax, unless statute authorized same (New Jersey Supreme Court: *Benesh v. Wolf*, 4 Atl. 2d, 523).

Ordinance licensing money lenders held not invalid as being discriminatory because exempting banks, trust companies and building and loan associations (Oklahoma Supreme Court: *Shinn v. Oklahoma City*, 87 Pac. 2d, 136).

Mob Damage

Restaurant keepers' allegations held to state statutory right to damages against city for damage done to equipment, etc., by party of five or more persons who attempted to compel agreement regulating the business (West Virginia Supreme Court of Appeals: *Meadows v. City of Logan*, 1 S. E. 2d, 394).

Notices

Requirement that notice of sale be published once a week during two consecutive weeks held obeyed where notice was published May 5 and 12 and sale was held May 13 (New Jersey Supreme Court: *Bassett v. Mayor and Board of Commissioners of Borough of Wildwood Crest*, 4 Atl. 2d, 393).

Officers' Compensation

Village Attorney held not entitled to additional compensation for services rendered within the scope of his official duties (Illinois Appellate Court: *Woods v. Village of La Grange Park*, 19 N. E. 2d, 406). For a similar ruling as to services of a city engineer see *Wyatt v. City of Danville*, 124 S. W. 2d, 1022, decided by the Kentucky Court of Appeals.

Police Measures

Ordinance forbidding grocery sales on Sundays after 1 P.M. upheld (New Jersey Supreme Court: *Richman v. Board of Commissioners of City of Newark*, 4 Atl. 2d, 501).

Ordinance requiring permit to canvass from house to house, etc., held inapplicable to distribution of notices of public meeting for discussion of fascism, etc. (New Jersey Supreme Court: *Town of Westfield v. Milgram*, 4 Atl. 2d, 515). And ordinance forbidding distribution of handbills, etc., in street held inapplicable to non-commercial circulars embodying matter of social interest pertaining to the Bill of Rights and the Constitution (New Jersey Supreme Court: *Ex parte Cox*, 4 Atl. 2d, 526).

Ordinance, authorized by statute, forbidding pinball machines in places of public resort upheld (Illinois Appellate Court: *Silfen v. City of Chicago*, 19 N. E. 2d, 640).

Ordinance forbidding uninvited solicitation of orders for goods on private premises held void as being unjustly discriminatory, since local merchants and licensed peddlers were permitted to solicit uninvitedly (Virginia Supreme Court of Appeals: *White v. Town of Culpeper*, 1 S. E. 2d, 269).

Ordinance forbidding driving of vehicles bearing commercial advertising within park system held invalid as giving officials unrestrained authority to determine what advertising is objectionable (Illinois Supreme Court: *Chicago Park District v. Canfield*, 19 N. E. 2d, 376).

Sewage Disposal

Nearby property owners held not aggrieved by borough's installation of sewer outlet into ocean, pursuant to State Board of Health order, especially since proceedings were pending to condemn such rights as owners had (New Jersey Supreme Court: *Faulks v. Borough of Allenhurst*, 4 Atl. 2d, 518).

Special Assessments

Property specially assessed for an improvement held not subject to additional assessment to cover delinquencies of other property (Montana Supreme Court: *State v. City of Shelby*, 87 Pac. 2d, 183).

Paving assessment held not subject to attack ten years after its levy as being confiscatory and void, even if the attack would have been sustained if made in due time (Georgia Court of Appeals: *City of Waycross v. Harrell*, 1 S. E. 2d, 681).

State Powers

Constitutional limitations on Legislature's powers to interfere in local affairs of municipalities held not to preclude state law fixing minimum wages for firemen (Illinois Supreme Court: *People v. City of Springfield*, 19 N. E. 2d, 598).

Streets and Alleys

Ordinances purporting to vacate street and alley portion held void as failing properly to describe alley boundaries and as being against the public interest (Iowa Supreme Court: *Pederson v. Town of Radcliffe*, 284 N. W. 145).

Taxation

Under statute permitting city to exempt manufacturers from personal property taxation, manufacturer held not entitled to exemption without complying with regulations governing applications therefor, fixed by the city's ordinance (Maryland Court of Appeals: *Eastern Tar Products Corp. v. State Tax Commission*, 4 Atl. 2d, 462).

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Municipal and Civic Publications

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Public Utilities

The Electric Power Industry—Development, Organization, and Public Policies.—By John Bauer, Ph.D., Director of American Public Utilities Bureau, and Nathaniel Gold, B.S., LL.B., Lecturer on Public Utilities at the College of the City of New York, with the technical cooperation of Alfred E. Shaw, S.B., M.S. in E.E., Licensed Professional Engineer. Harper & Brothers, New York. 1939. *xii* + 347 *pp.* $3.50 *from* THE AMERICAN CITY.

The authors of this book conceive of the electric power industry as the principal factor in expanding productivity of the country, and in raising the standards of living of the masses of people. As such, its development affects, directly or indirectly, everyone in the country, and therefore, its proper organization, management and control—to the end of producing electrical power for maximum availability and minimum cost—become of vital public importance.

Written in non-technical language, the book is divided into three parts: the first dealing with the general development and growing importance of the industry; the second with private organization and management; and the third with public objectives and control. The first outlines technological advances in steam-power generation, in hydroelectric generation, and in transmission, distribution, and utilization; and surveys costs, rates, availability of power, and the needs of the various interests which depend upon adequate and cheap supplies. Part II discusses "the prevailing power organization, especially the financial and other distortions created and embodied by the existing holding-company systems and the consequent obstacles to attainment of public purposes." Part III, concerned with public control to keep the industry properly directed to basic objectives, considers results from private ownership and public control, and from direct public ownership and operation. One chapter deals with the accomplishments of municipally owned electric systems. It presents for consideration "comprehensive public organizations by states and distribution areas, coordinated with regional and national grouping."

Water Pollution

"Water Pollution in the United States," the Third Report of the Special Advisory Committee on Water Pollution of the National Resources Committee, gives a comprehensive, over-all survey of the status of water pollution in the United States—its sources, effects, location; and outlines the financial, technical and administrative aspects of a recommended program for pollution abatement, including recommendation for new state and Federal legislation. Appendixes summarize state laws and regulations affecting pollution of waters, and recounts briefly the experience with pollution abatement in western European countries. xiv + 165 pp. (Apply to Govt. Printing Office, Washington, D. C.)

Industrial Development

Reprinted from the March and April issues of the *National Real Estate Journal*, "The Economic Location of Industrial Plants," by Herbert S. Swan, industrial consultant, is a compact analysis of basic factors which today affect the location and growth of industries, and consequently the stability and growth of cities, particularly the small city. The following factors are considered: invention; presence of raw materials; freight rates and availability of transportation; labor supply and relations. The author suggests how the city will have to re-orient itself, as a result of changing industrial development, by a process of self-examination and economic planning. 7 pp. (Apply to National Real Estate Journal, 60 E. 42nd St., New York.)

Municipal Index and Atlas

Municipal Index and Atlas, 1939.—*The American City Magazine Corporation, 470 Fourth Ave., New York. Fifteenth annual edition.* 603 *pp.* $5.00.

The Municipal Index contains again editorial articles reviewing principal trends and aspects of progress during the past year, in seven divisions of the municipal public works field. Besides articles on street cleaning and snow removal, Section 3 on the Construction and Maintenance of Streets and Highways contains a new feature—a symposium by engineers from all over the country, on the paving they would recommend for particular types of streets. Of especial interest in the next section, on Water Supply and Purification, is a tabulation of statistics from 1,500 cities, on fire hydrants; and an article on the new method of water softening by the lime method. "Accuracy in Metering" is the third article in this section. Besides an article on general trends in refuse disposal, the section on Sewage and Garbage Disposal contains a comprehensive and inclusive discussion of sewer-rental laws; and an article on the little-considered mechanical aspects of sewage treatment. Among articles on various aspects of lighting, in the section on Lighting and Power, one gives a tabulation of street-lighting costs in 140 cities. "Yardsticks for Diesel Operation" tabulates comparative and unit production costs of 10 municipal diesel-electric plants. The section on Public Safety includes a list of 106 cities having parking meters, discusses traffic signals and fire equipment, and—particularly significant—the fast-developing use of radio for all municipal services. Section 8 deals with swimming pool standards and equipment; gives tables showing the status of airports and landing fields, by states; and includes a particularly important article giving suggestions on "How to Better Your City Park." An article in Section 9 on Business Machines reviews the beneficial results for those cities which have installed machines for accounting.

Adding to the value of the Index as a reference book on the desk of municipal officials and of manufacturers of products used by them, are the lists, compilations and tabulations, which include, besides those already mentioned: maps of each of the 48 states and of each continent; population of cities and towns in the United States, of 1,000 or more inhabitants; city officials and state highway department engineering personnel; selections of articles appearing in THE AMERICAN CITY in 1938; municipal gas plants in the United States; equipment for swimming pools in 55 cities; new books and pamphlets for the city hall library; indexes to court decisions affecting municipalities, and to legal decisions on zoning and planning, reviewed in THE AMERICAN CITY in 1938; cities which have received housing loans from the USHA.

Illustrated advertisements showing latest improvements in materials, products and equipment of interest to municipal officials, are, as before, catalogued and indexed. A directory of consultants is included.

Water Supply

"'More Water Glideth by the Mill than Wots the Miller of'" is a pamphlet written by superintendents and other officials of waterworks departments in 14 of the large cities of the country, showing from their actual experience the advantages that have resulted in their respective cities from the installation of water meters. Among others, these include: reduction in operation costs, water rates and sewage costs, through detection and thus elimination of waste by leaky plumbing, leakage from street mains, or careless running of water; and conservation of water resources; increased storage resulting in some cases in lowered fire insurance rates; more equitable distribution of costs to the consumer. 31 pp. (Apply to Neptune Meter Co., 50 W. 50th St., N. Y.)

Concrete Bridges

Reinforced-Concrete Bridges.—By the late Frederick W. Taylor, Sanford E. Thompson, President, The Thompson & Lichtner Co., Inc., and Edward Smulski, Structural Engineer, Chicago, Ill. John Wiley & Sons, Inc., New York. 1939. 456 *pp.; 187 figures.* $6.50.

The authors have prepared a worth-while treatise on the logical design of bridges other than trusses and arches. They present a comprehensive treatment of all types of bridges that have thus far been developed, such as slab bridges, simple deck and through girder bridges, cantilever and continuous girder bridges, rigid frames and flat-slab bridges. Important is the discussion of the relative economy and usefulness of these types for different conditions, and also the procedure to be followed in developing a design best fitted for any specific requirement. Examples of computations and illustrations of design details are very helpful in making the book of practical value. Although primarily devoted to reinforced-concrete bridges, much of the information is of a general nature and is applicable also for bridges built of structural steel as well as for other types of structures both of steel and reinforced concrete. A valuable publication for any city engineer's office.

Housing and Planning

Housing for the Machine Age.—By Clarence Arthur Perry. Russell Sage Foundation, New York. 1939. 261 *pp.* $2.50.

Besides containing much valuable new material, this book repeats in simplified form the description of the "neighborhood unit formula" which was contained in Mr. Perry's book, "Neighborhood and Community Planning," and contains the leading plans shown in his book, "The Rebuilding of Blighted Areas." Its principal object, however, is the study of a legal procedure which will make possible large-scale building by neighborhoods. The author presents the argument that condemnation of land by eminent domain, by capable construction companies, to obtain sites for neighborhood units, can be legally sanctioned on the basis of the public benefits which such neighborhood building bestows.

The book points out and analyzes what the author believes to be the reasons for the lag in advancement of the housing industry as compared with other industries; depicts the advantages to industry and the community of the application of the neighborhood unit idea; describes the procedure for developing single-family sections and apartment-house neighborhood units; outlines the history and social significance of the unit idea.

Fire Fighting

Technical progress and growing public interest in fire prevention have increased the necessity and demand for more and specialized training for firemen. The Vocational Division of the Office of Education has put out a bulletin, "Vocational Training for Firemen," which gives a general idea of the "present status of fireman training, especially with regard to programs which have been developed in the states in cooperation with public vocational education." It outlines the objectives of the program, points out special factors which should be considered in planning training programs, describes the types of service that can be rendered to fire departments by public vocational training agencies, and the availability of funds. One section is devoted to the question of how a local fire department may secure assistance in setting up and operating a training program. Appendices present specific work that is being done in this field in Massachusetts and California. v + 56 pp. 10c. (Apply to Supt. of Documents, Washington, D. C.)

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Government of Education

The Government of Education in Metropolitan Chicago.—By John Albert Vieg, Iowa State College. The University of Chicago Press, Chicago, Ill. 1939. xviii + 274 pp. $2.50 from THE AMERICAN CITY.

This study examines the interrelationships between education and government in the Chicago area during the past twenty-five years, and points out possible solutions to problems that have emerged from this development, which will benefit not only education but government, and beyond this, the democratic way of life. Recommendations are made for the simplification and unification of the administrative units of education; for the reorganization of overhead supervision to put the control and responsibility for the administration of education under the municipality and thus more directly the taxpayer; for the reconstruction of school financing, including greater reliance on state-raised locally shared taxes; and for the improvement of personnel administration. One chapter suggests practical means for carrying out these reforms. A bibliography is included.

Housing

The United States Housing Authority has recently published several new bulletins on policy and procedure. A revision of Bulletin No. 15, on "Preparation of Drawings and Specifications," originally published on August 18, 1938, has been prepared to aid local housing authorities and architects in drafting plans and specifications for low-rent housing projects, to be submitted to the United States Housing Authority for approval. The main body of the report gives general suggestions, and the appendix outlines specific information required.

An Addendum No. 1 to Bulletin 15, "Steps in the Development of a Low-Rent Housing Project Subsequent to the Execution of the Contracts of Loan and Annual Contribution," presents a revised edition of Section VI on Budgets. Addendum No. 2 clarifies "certain questions relative to the determination of architectural fees and the time and manner of payment thereof." 4 + 2 pp.

Bulletin No. 16 on "Planning for Low Rents," which was originally published in August of last year, has been revised. It outlines the factors which influence rents in housing projects: Market and Rentability; Financing and Subsidy as They Affect Rents and Capital Costs; and Annual Expenses of Project Administration. The last of these sections suggests principles of planning that will lead to lower rents through lower management costs. 16 pp.

Bulletin No. 18 discusses "Site Selection" in respect to the following factors: city planning and zoning; size of the site and its relation to site density; sectional influences; racial considerations; the value of natural boundaries for a site; exclusion of through streets from the project; costs of street construction, utilities and transportation. The relative merits of vacant or slum sites are analyzed briefly. A check list of items to be considered in site selection is given in outline form. 20 pp.

Bulletin No. 19, "Planning Utility Services and Rate Negotiations," is primarily concerned with the costs and uses of electricity and gas. It suggests methods for analyzing the comparative costs of various utility services which may be combined, and for estimating the overall cost to tenants of various combinations of service. Tables present Data for Computing Capital Costs and Expense for Repairs, Maintenance and Replacements; and a sample analysis for a particular project. 23 pp. (Apply to United States Housing Authority, Department of the Interior, Washington, D. C.)

Water Pollution

The effective report for 1937-38 of The Stream Control Commission explains the function of the Commission, its relation to other state departments and to municipalities; lists a record of its activities in outline form; explains what is being done by the Commission in various phases of sewage pollution and industrial waste control. An outline summary section gives a quick picture of accomplishments for the year. 82 pp. (Apply to The Stream Control Commission, Lansing, Mich.)

Recreation

Swimming Pool Standards.—By Frederick W. Luehring, Ph.D. A. S. Barnes and Co., New York. 1939. xii + 273 pp. $5.00 from THE AMERICAN CITY. *Edition limited to 1,000 copies.*

This study provides standards for the planning, construction, and administration of swimming pools in educational institutions. Contrary to most of the literature on the subject, which has dealt with the swimming pool from the sanitary, engineering, medical or architectural point of view, this volume considers the pool in its most important function as an agency for health and physical education. One chapter gives a brief historical survey of the pool from ancient beginnings up to the present time. Another presents the legal aspects and implications of the pool relative to state and local laws and board of health rules and regulations, and the legal responsibilities and liabilities of the pool owners. Criteria governing the selection of standards are discussed, and standards for the following aspects of the swimming pool in educational institutions are covered: preliminary planning; site, location and environment; the pool building, room and basin; equipment for the pool room and the pool; spectators' gallery; instructor's office; recirculation system; accessory personal service facilities; heating and ventilation; lighting; and standards for administrators, instructors, engineers and pool users.

Roadside Protection

The April *Quarterly Bulletin* of the American Nature Association is devoted to a report by Mr. and Mrs. W. L. Lawton, of the National Roadside Council, of a survey of progress in the control of roadside conditions in New England. The bulletin describes the fight that has been waged to remove the various types of billboards from the roadsides, in each of the New England states: the laws passed; the extent of the enforcement that has been possible; court decisions; what remains still to be done. The report cites the highways of Massachusetts as having less advertising than any other state equally populated with cities and towns. Pointers for other states from New England's experience are listed briefly. 31 pp. 25c. (Apply to the Association, 1214 16th St., N. W., Washington, D. C.)

Bibliographies

A bibliography of 1938 publications on the various phases of municipal government, entitled "New Books and Pamphlets for the City Hall Library," is included in THE MUNICIPAL INDEX, 1939, pp. 581-585. Other more detailed bibliographies on specific aspects of municipal government, which have been recently received, are:

"A Selected List of References on Municipal Government in the United States." Compiled by Ann Duncan Brown, under the direction of Florence S. Hellman, Chief Bibliographer. —Division of Bibliography, Library of Congress, Washington, D. C. 1938. 57 pp. (Includes lists of other bibliographies.)

"Your Business of Government—A Catalog of Publications in the Field of Administration." —Public Administration Service, 1313 E. 60th St., Chicago, Ill. Spring, 1939. 23 pp.

"Planning Bibliography."—American Society of Planning Officials, 1313 E. 60th St., Chicago, Ill. 1939. 13 pp. 25c.

"List of Publications."—Tax Policy League, 309 E. 34th St., New York. Issued monthly. 2 pp.

"Publications Obtainable from the National Association of Housing Officials."—The Association, 1313 E. 60th St., Chicago, Ill. 1939. 9 pp.

"Publications of the United States Housing Authority."—USHA, Department of the Interior, Washington, D. C. 1939. 4 pp.

"Bibliography on Housing Management."—Citizens' Housing Council of New York, 470 Fourth Ave., New York. 1939. 10 pp. 10c.

"Slum Clearance in the United States—A Selected Reading List," compiled by Gilbert A. Cam.—New York Public Library, 5th Ave. and 42nd St., New York. 1938. 12 pp. 15c.

Public Utilities

Public Utility Regulation.—By G. Lloyd Wilson, Professor of Transportation and Public Utilities; James M. Herring, Ph.D., Assistant Professor of Geography and Public Utilities, University of Pennsylvania; and Roland B. Eutsler, Ph.D., Professor of Economics and Insurance University of Florida. McGraw-Hill Book Co., New York. 1938. xv + 571 pp., including index. $4.00 from THE AMERICAN CITY.

Not only as a textbook for formal study, but also as a means of presenting a reasonably comprehensive view of utility regulation to officials and employees, public and private, this book is a useful addition to utility literature. The authors state their belief that they have presented an unbiased public point of view; and they have succeeded unusually well.

As illustrating the difficulty of keeping up with this changing subject, the book expresses the need for Federal regulation of interstate natural gas; today that activity is getting under way. "Going value" as a matter for separate consideration in the rate base is given more deference than the most recent Supreme Court decisions require. But the book reflects current trends, in general. It is particularly well provided with descriptions of the recent extensions of Federal influence in the utility field.

H. M. OLMSTED.

Finance

One of the main goals of the National Committee on Municipal Accounting is to bring about greater comparability of financial statistics between municipalities, through greater uniformity in municipal accounting and reporting procedure. "A Standard Classification of Municipal Revenues and Expenditures," a recent publication of the Committee, deals with one element essential to such uniformity. Part I of the bulletin discusses the basis upon which the classification has been developed and the uses to which it can and should be put. Part II contains a chart of expenditure accounts and a chart of revenue accounts, with explanations of each. Adaptable to any municipality, the classification is designed to serve as a basis for: accounting, budget making and reporting; administrative control and cost accounting; and the compilation of financial statistics by state and Federal agencies. 103 pp. $1.00. (Apply to National Committee on Municipal Accounting, 1313 E. 60th St., Chicago, Ill.

Legal Aspects of Airports

The National Institute of Municipal Law Officers has published a preliminary report on "Airports and Airplanes and the Legal Problems They Create for Cities," which covers problems of acquisition, location and operation of municipal airports, protection of airport approaches, and municipal regulation of flying. Reflecting the collective experience of many municipalities, it was compiled from answers to a questionnaire sent to all city attorneys, discussion of the question with experts, and research into available material on the subject. It contains, of course, discussion of cases, and quotations from court decisions. The Appendix consists of reproductions in full of statutes, ordinances and acts. v + 51 pp. $1.00. (Apply to the Institute, 730 Jackson Pl., Washington, D. C.)

Housing

The Chicago Building Congress has endorsed and recommended the creation of public service building companies, patterned after existing public service companies, which would have the power to acquire slum neighborhoods by eminent domain—on the grounds of public use, benefit, and advantage—for the purpose of clearing the slums from, and rebuilding, these areas. An address by Paul D. Angell, published in a pamphlet, "The Case for Slum Clearance by Private Enterprise," explains how the slums developed, points out the great need for getting rid of them, gives the reasons why the Building Congress feels that public service companies, rather than the Government, should be responsible for slum clearance. 24 pp. 10c. (Apply to The Chicago Building Congress, Inc., 29 S. La Salle St.

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Power

"Electric Power Statistics—1938" gives data showing the production of electric energy for public use in the United States during 1938, and the capacity of electric generating plants and their consumption of fuel during the past 19 years. Contained also is information concerning the movement of electric energy across state lines, and data relating to power production and capacity by class of ownership and type of prime mover, shown by states, geographical regions and the country as a whole. 25c. (Apply to Federal Power Commission, Washington, D. C.)

Public Health Personnel

Prepared by the Committee on Professional Education of the American Public Health Association, "Educational Qualifications of Personnel in Environmental Sanitation" describes in a general way educational requirements for public health engineers, sanitarians, sub-professional field personnel in sanitation. At present, most public health engineers gain a considerable part of their public health education through experience, since only a few schools have training courses for the growing field of activities which he carries on in his job. 8 pp. (Apply to The American Public Health Assn., 50 W. 50th St., New York.)

Government and Administration

The new edition of "New York Advancing" summarizes the last five years of municipal development in New York City, and outlines plans for the future. The work of each department of this complicated government is described in dramatic fashion. A "Guide to the City Exhibit Building at the World's Fair," is included. xxvi + 270 pp. 50c. (Apply to Municipal Reference Library, 2230 Municipal Bldg., New York.)

Other Reports Received

CHICAGO, ILL.—Budget Report on Engineering Work, 1939.—By William H. Trinkaus, Chief Engineer, 101 pp.

DES MOINES, IOWA.—Annual Report, City Plan and Zoning Commission, 1938-1939.—Compiled by Edyth Howard, Secretary. 49 pp.

ERIE, PA.—Annual Report, Department of Accounts and Finance, 1938. 71 pp.

ERIE, PA.—Budget for 1939. 59 pp.

HANOVER, BOROUGH OF, PA.—Annual Report, Borough Manager, 1938. 22 pp.

LOS ANGELES, CALIF.—"Plan," annual reports for 1937 and 1938 of the Dept. of City Planning. 37 pp.

MARQUETTE, MICH.—Reports of the City, 1938. 93 pp.

MCPHERSON, KANS.—Annual Report, 1938. 44 pp.

MILWAUKEE, COUNTY, WIS.—Financial Summary, County Clerk, 1938.—By George F. Breitbach. 121 pp.

MINNEAPOLIS, MINN.—Annual Report, Fire Department, 1938. 42 pp.

—Budget Facts and Financial Statistics for 1939.—Board of Estimate and Taxation. 48 pp.

MULTNOMAH COUNTY (PORTLAND), ORE.—Budget Facts and Financial Statistics for 1939. 84 pp.

NEW JERSEY.—Annual Report, State Housing Authority, 1938. 63 pp.

NEW YORK, N. Y.—Annual Report, City Planning Commission and the Department of City Planning, 1938. 94 pp. 50c.

READING, MASS.—Annual Report, Board of Public Works, 1938. 242 pp.

ROCHESTER, N. Y.—Annual Report, 1938. 43 pp.

SAN JOSE, CALIF.—Municipal Report, 1938. 31 pp.

SPOKANE, WASH.—Annual Report, City Auditor, 1938. 115 pp.

Conventions - - When and Where

Meeting is annual convention unless otherwise designated

JUNE 11-15.—ATLANTIC CITY, N. J.
American Water Works Association. (Hotels Ambassador and Chelsea.) Sec., Harry E. Jordan, 22 E. 40th St., New York.

JUNE 13-16.—MILWAUKEE, WIS.
Smoke Prevention Association. (Hotel Schroeder.) Sec., Frank A. Chambers, City Hall Square Bldg., Chicago, Ill.

JUNE 15-17.—BUFFALO, N. Y.
American Public Welfare Association. (Statler Hotel.) Dir., Fred K. Hoehler, 1313 E. 60th St., Chicago, Ill.

JUNE 16-18.—NIAGARA FALLS, N. Y.
Community Chests and Councils, Inc. Niagara Falls Hotel.) Exec. Vice-Pres., Allen T. Burns, 155 E. 44th St., New York.

JUNE 20-22.—PROVIDENCE, R. I.
New England Association of Fire Chiefs. Sec., John W. O'Hearn, Watertown, Mass.

JUNE 22-23.—BIRMINGHAM, ALA.
Alabama League of Municipalities. (Tutwiler Hotel.) Exec. Sec., E. E. Reid, Exchange Hotel, Montgomery, Ala.

JUNE 26-28.—STATE COLLEGE, PA.
Pennsylvania Sewage Works Association. (Nittany Lion.) Sec., L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

JUNE 28-30.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Sec.-Treas., I. M. Glace, 22 S. 22d St., Harrisburg, Pa.

JULY 2-6.—SAN FRANCISCO, CALIF.
National Education Association of the United States. Exec. Sec., Willard E. Givens, 1201 16th St., N. W., Washington, D. C.

JULY 5-13.—STOCKHOLM, SWEDEN.
International Federation for Housing and Town Planning. Sec., Mrs. Paula Schafer, rue Cantersteen 47, Shell Bldg., 608, Brussels, Belgium.

JULY 17-19.—OGDEN, UTAH.
National County Officers' Association. Sec.-Treas., George F. Breitbach, Court-House, Milwaukee, Wis.

AUGUST 13-19.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. (Northwestern Univ.) Sec., C. R. Miles, 832 First Nat'l Bank Bldg., Chicago, Ill.

AUGUST 14-17.—CEDAR RAPIDS, IOWA.
League of Iowa Municipalities. Sec.-Treas., Frank G. Pierce, Marshalltown, Iowa.

AUGUST 24-25.—DULUTH, MINN.
American Water Works Association—Minnesota Section. (Duluth Hotel.) Sec.-Treas., Ronald M. Finch, Wallace & Tiernan Co., 414 Flour Exchange, Minneapolis, Minn.

SEPTEMBER 12-14.—KANKAKEE, ILL.
Illinois Municipal League. Sec., A. D. McLarty, 500 E. Capitol Ave., Springfield, Ill.

SEPTEMBER 12-15.—MONTREAL, QUE.
New England Water Works Association. (Hotel Windsor.) Sec., Frank J. Gifford, 615 Statler Bldg., Boston, Mass.

SEPTEMBER 18-21.—PHILADELPHIA, PA.
American Institute of Park Executives. (Bellevue-Stratford Hotel.) Exec. Sec., Will O. Doolittle, Box 422, Tulsa, Okla.

SEPTEMBER 18-19.—DENVER, COLO.
American Water Works Association—Rocky Mountain Section. (Shirley-Savoy Hotel.) Sec., B. V. Howe, State Office Bldg., Denver, Colorado.

SEPTEMBER 18-20.—JOHNSTOWN, PA.
American Water Works Association—Western Pennsylvania Section. Sec., E. P. Johnson, 418 Flannery Bldg., Pittsburgh, Pa.

SEPTEMBER 18-21.—OAKLAND, CALIF.
League of California Municipalities. Sec., Richard Graves, 223 City Hall, San Francisco, California.

SEPTEMBER 18-19.—OLD POINT COMFORT, VA.
League of Virginia Municipalities. Exec. Sec., Morton L. Wallerstein, 902 Travelers Bldg., Richmond, Va.

SEPTEMBER 20-22.—LANSING, MICH.
American Water Works Association—Michigan Section. (Olds Hotel.) M. N. Gerardy, Water Board Bldg., Detroit, Mich.

SEPTEMBER 20-23.—SAN FRANCISCO, CALIF.
International Association of Fire Chiefs. (Fairmont Hotel.) Sec., James J. Mulcahey, 16 Franklin Ave., Yonkers, N. Y.

SEPTEMBER 28-30.—MORGANTOWN, W. VA.
American Water Works Association—West Virginia Section. (Morgan Hotel.) Sec., John B. Harrington, State Dept. of Health, Charleston, W. Va.

OCTOBER 5-6.—READING, PA.
American Water Works Association—Four States Section. (Berkshire Hotel). Sec.-Treas., Carl A. Hechmer, Washington Suburban Sanitary Dist., Hyattsville, Md.

OCTOBER 9-10.—SANTA FE, N. MEX.
National Parks Conference. American Planning and Civic Association. Exec. Sec., Harlean James, 901 Union Trust Bldg., Washington, D. C.

OCTOBER 9-11.—PITTSBURGH, PA.
American Public Works Association. Exec. Dir., Frank W. Herring, 1313 E. 60th St., Chicago, Ill.

OCTOBER 9-12.—SAN FRANCISCO, CALIF.
International Association of Chiefs of Police. (Fairmont Hotel.) Exec. Vice-Pres., W. P. Rutledge, 1313 E. 60th St., Chicago.

OCTOBER 9-12.—PROVIDENCE, R. I.
International Municipal Signal Association, Inc. (Providence-Biltmore Hotel.) Sec., Irvin Shulsinger, 7 E. 42d St., New York.

OCTOBER 9-13.—BOSTON, MASS.
National Recreation Association. (Hotel Statler.) Sec., Howard S. Braucher, 315 Fourth Ave., New York.

OCTOBER 11-13.—KANSAS CITY, MO.
American Water Works Association—Missouri Valley Section. (Hotel President.) Sec., Earl L. Waterman, Univ. of Iowa, Iowa City, Iowa.

OCTOBER 16-19.—DALLAS, TEXAS.
American Water Works Association—Southwest Section. Sec.-Treas., Lewis A. Quigley, 3320 W. Berry St., Fort Worth, Texas.

OCTOBER 16-20.—CINCINNATI, OHIO.
National Association of Public School Business Officials. Sec., H. W. Cramblet, Board of Education, Pittsburgh, Pa.

OCTOBER 16-20.—ATLANTIC CITY, N. J.
National Safety Council. M'ng Dir., W. H. Cameron, 20 N. Wacker Drive, Chicago, Ill.

OCTOBER 17-20.—PITTSBURGH, PA.
American Public Health Association. (William Penn Hotel.) Exec. Sec., Dr. Reginald M. Atwater, 50 W. 50th St., New York.

OCTOBER 20-21.—ATLANTIC CITY, N. J.
American Water Works Association—New Jersey Section. (Claridge Hotel.) Sec.-Treas., H. N. Lendall, College of Engineering, Rutgers Univ., New Brunswick, N. J.

OCTOBER 25-28.—SAN FRANCISCO, CALIF.
American Water Works Association—California Section. (Fairmont Hotel.) Sec.-Treas., Carl M. Hoskinson, Div. of Water, Sacramento, Calif.

OCTOBER 30-NOVEMBER 1.—OSHKOSH, WIS.
American Water Works Association—Wisconsin Section. (Raulf Hotel.) Sec., L. A. Smith, City Hall, Madison, Wis.

NOVEMBER 6-8.—CHARLOTTE, N. C.
American Water Works Association—North Carolina Section. Sec., R. S. Phillips, Dacian Ave., Durham, N. C.

NOVEMBER 22-24.—NEW ORLEANS, LA.
National Association of Housing Officials. Dir., Dr. Coleman Woodbury, 1313 E. 60th St., Chicago, Ill.

All Street Litter Quickly Removed — Cleans Up to 25 Miles of Curb Lane Daily — Low in Cost — Easy to Operate.

What Follows the Demonstration?

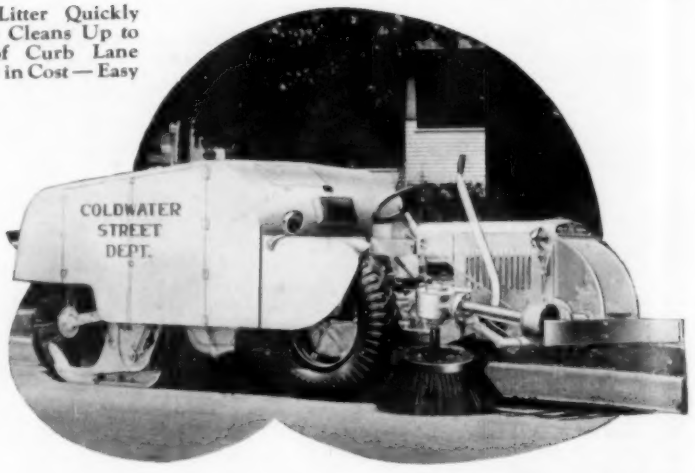
Year after year of satisfactory operation follow — when you buy a Hough Motor Pick-Up Sweeper; plus long time, low maintenance operation coupled with thorough, high-speed gutter cleaning.

Too, a periodic check up by a Hough experienced service man insures continued efficiency of operation and a maximum return on your equipment investment.

Remember these facts — Hough Motor Pick-Up Sweepers have no rapidly wearing parts, no down pressure on broom or brush to cause quick wear — but employ a simple, highly efficient elevator to convey the dirt to the dirt box.

Additionally, flushing costs, health hazards and sewer clogging are greatly reduced. *Use a Hough Motor Pick-Up Sweeper!*

Let us give you operating costs — and a copy of Bulletin No. 112.



A Hough Motor Pick-Up Sweeper used at Coldwater to promote civic pride through clean, safe streets is shown above.

ROAD BUILDING and MATERIALS HANDLING EQUIPMENT

HOUGH

Since 1920

THE FRANK G. HOUGH CO.
919 N. Michigan Ave.
Chicago, U.S.A.

TRAFFIC COUNTING SIMPLIFIED WITH THE NEW TRAFFIC COUNT DENOMINATOR

HUNDREDS NOW IN USE BY PROGRESSIVE STATE AND CITY HIGHWAY COMMISSIONS.

Even at busy corners *one* person with four machines (like the single machine illustrated), mounted on board, can easily make period traffic counts. The three counting units in each of the four machines represent the three possible directions any vehicle can make coming from the North, South, East and West.

Machines are operated by touch system and permit the operator to keep eyes on road at all times.

Denominators are group counting machines. Made with from 1 to 12 counting units mounted in a horizontal line, for City Street, County and State Road Traffic Surveys.

Counting units may also be classified to represent types of vehicles, State license plates, tabulations of car inspection *rejections*, etc.

Re-set knob on left returns all counting units to zero.

Traffic period counts can be made with the Denominator in a fraction of the time taken by other methods.

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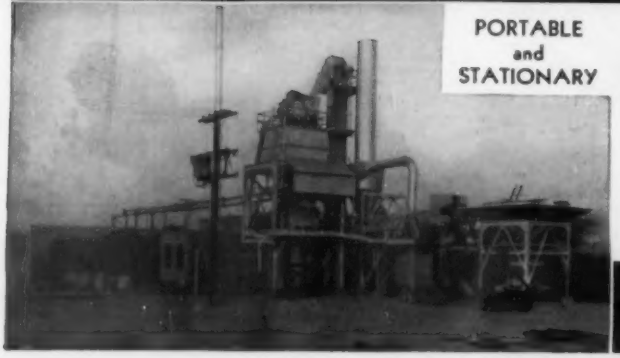

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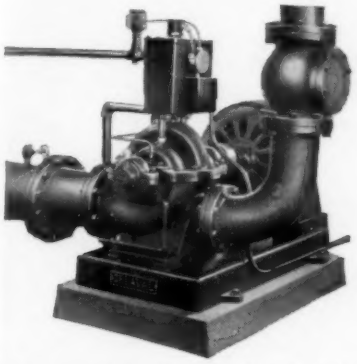
News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings



A De Laval Centrifugal Equipped with a Submerged Suction Priming Device

Priming Equipment for Centrifugal Pumps

The starting and operation of centrifugal pumps would be greatly simplified if such pumps could always be located sufficiently below the source of supply so that they would fill by gravity, with only a simple air vent. Except in a few cases, this is not practicable, by reason of natural grades, cost and difficulty of building and waterproofing underground pits, either dry or wet, difficulty in keeping dry pits drained, danger of wet pits filling up, and difficulty in the upkeep of a submerged pump. It is generally necessary, therefore, to locate the pump above the source of supply, which, while it facilitates overhauling and maintenance, introduces the problem of filling the pump with liquid before starting, keeping it filled, and insuring that priming, if lost, can promptly and certainly be re-established and the pump put back into operation.

A system by which the water level on the suction side of a pump is automatically lifted above the eye of the impeller and continuously held there has been developed by the De Laval Steam Turbine Co., Trenton, N. J. The water level in the suction space is raised above the center of the pump when the pump is initially put into service, which generally takes from one to five minutes, depending upon the length and size of the suction piping. Thereafter the entire suction line and the pump casing are normally kept full of fluid, so that discharge begins immediately the motor is started; while if for any reason the priming should be lost, the pump motor is at once shut down until the water level has again been raised above the pump suction opening.

A priming chamber mounted above and on the pump casing contains, or is connected to, an air-evacuating device consisting of a simple water, air or steam ejector drawing from the priming chamber through a check-valve and discharging to waste at some convenient point. Two pairs of small pipes, one known as the "wet" pipe and the other, located inside the first pipe, as the "dry" pipe, connect the priming chamber to each of the suction bells of the pump. In addition to these parts, the pump discharge line has the usual check-valve and gate- or other shut-off valve.

When the ejector is started, air is withdrawn from the priming chamber, the pump casing and the suction line, and the water rises through the latter, filling the pump and eventually passing up through the wet pipe and rising in the priming chamber. The starting and stopping of the ejector is controlled by a valve operated by a solenoid energized from an electrical device which responds to the water level within the priming chamber, this same device also controlling the starting and stopping of the motor driving the main pump.

The governing impulses originate from two electrodes which enter through the top wall of the priming chamber with insulated bushings, similar to spark plugs, and terminate at different levels in the priming chamber. The electrodes are connected to one terminal of the secondary circuit of a small a-c transformer, the priming chamber itself being connected to the other terminal, while the circuits of which they form parts include a magnetic relay which is so arranged that the ejector will be started and the pump motor prevented from operating whenever the water level falls below the lower electrode, while the vacuum producer will be shut down and the pump permitted to operate when the water reaches the upper electrode.

New R.R. Crossing Guard Has Hydraulic Snubber

Two installations of a new automatic crossing guard have recently been completed at Middletown, Del., at a crossing of U. S. 13 and the Pennsylvania Railroad, and at Pocomoke, Md., on U. S. 13 where it crosses the Delmar Division of the Pennsylvania. The new gate, called the Highway Guardian, is of skeleton steel work built as an arc, with the concave side facing approaching highway traffic. Across the frame are two strong cables stretched like the strings of a bow.

The end of the gate when lowered fits over a post on a snubber consisting of an hydraulic cylinder. A car striking the gate is snubbed by the cables, slowing it up, and the hydraulic snubber at the end of the gate finishes the job, bringing it gently to a full stop.

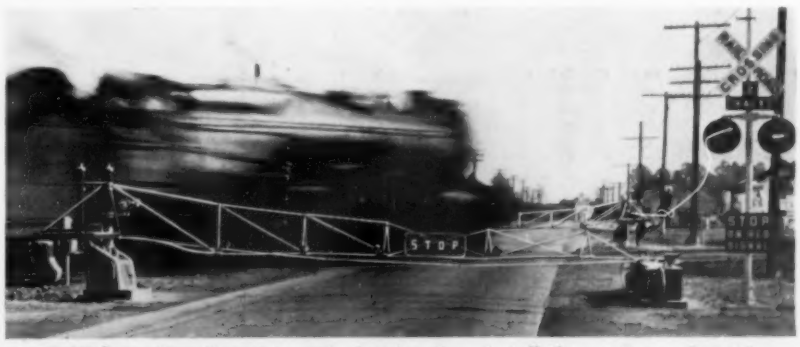
The manufacturers, Atlantic Steel Castings Co., Chester, Pa., report that officials of the respective state highway departments have tested the gate with cars at fifty miles an hour and, while the front fenders and radiator grill may be bent, the machine will be stopped without serious damage to the car or injury to the occupants.

The gates are designed to be fully automatic. Approaching trains lower the gates and turn on flashing red lights set in the gates. If an automobile is caught between the gates, it can continue, pushing the far gate back without damage. At night red lights on the road arms, standard flashing lights, and floodlights operated by the train, give ample warning. It is reported that ten crossings can be protected by the Highway Guardian for about the average cost of one crossing elimination.

U. S. Pipe & Foundry Official Dies

Charles R. Rauth, Secretary and Treasurer of the United States Pipe and Foundry Co., Burlington, N. J., died at his home in Edgewater Park, N. J., on May 16 after a five months' illness. Mr. Rauth had been connected with the company since its formation in 1899. Besides being an officer he was also a Director of U. S. Pipe & Foundry Co., and other companies.

Upon organization of the Burlington County Welfare Board in 1932, Mr. Rauth was elected Director and subsequently made Chairman of the Board, which he served faithfully in this capacity until his resignation in February of this year.



A Highway Guardian Automatic Crossing Gate Installation at Pocomoke, Md.

DRESS UP YOUR HIGHWAYS IN A NEW COAT OF TRINIDAD

Sections of Collingsworth Road, Upper Arlington, Ohio, were resurfaced in 1938 with Barber Liquid Asphalt LC. This photograph, made in April, 1939, shows (foreground) *the badly cracked sheet asphalt before surface treatment, and* (background) *the smooth, perfect result of the resurfacing treatment.*

TRINIDAD Native Lake Asphalt has always been recognized as the highest quality material for highway construction. Now you can get this better asphalt for resurfacing worn-out roads of all kinds, and the *low cost* is an additional reason for insisting upon it.

With Trinidad you can count on years of service and genuine low-cost-per-square-yard-per-year maintenance. Trinidad assures unusual stability under traffic and high resistance to wear.

Barber offers five blends of Trinidad for resurfacing old bitumen-bound gravel, bitumen-bound macadam and other hard-surface highways and streets. Specify them by name—Barber Liquid Asphalts LC, LD, LC-1, LC-2 and LRC-2.

In addition, Barber offers a complete line of asphalts for highway construction and maintenance. Mail the coupon for full details of the products you're most interested in.

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MAIL THIS COUPON

BARBER ASPHALT CORPORATION, *Dept. AC-12*
Barber, New Jersey

Please send full details about

- ☐ TRINIDAD LAKE ASPHALT
- ☐ GENASCO CRACK FILLER
- ☐ BARBER COLD PATCHING ASPHALTS
- ☐ BARBER BLENDED NATIVE LAKE LIQUID ASPHALTS
- ☐ GENASCO BLOCK AND JOINT FILLER

Name _____

Address _____

City _____ *State* _____

When you write for that catalog, kindly mention THE AMERICAN CITY.

The New Model of the Handy Sandy Spreader

New Model Offered of Sanding Machine

An improved model of the well-known "Handy Sandy" spreader has been announced by the Good Roads Machinery Corporation, Kennett Square, Pa. This machine employs a revolving roll and wire-brush control gate to insure uniform spreading of the sand across the road. The brush in the new model contains 2,850 spring steel wires, all of which vibrate continually. The agitation thus created causes material to flow uniformly through the spreader. The flexibility of the wire-brush gate permits oversize material and foreign objects to pass through without clogging the machine. Through the adjustments this spreader handles any material from sand to 2-inch stone.

A two-way automatic clutch maintains the direction of rotation of the feeder roll, allowing the spreader to operate with the truck going forward or backward. Two pairs of dual wheels equipped with pneumatic or solid rubber tires support the spreader, which is attached to the rear of the truck. Illustrated literature and additional information can be obtained from the manufacturer by mentioning this item.

Novel Truck Parade of Refuse Collectors

The "Knights of the Iron Horses" of Detroit, Mich., recently held a parade through the downtown section of Detroit in celebration of the purchase of 115 new Ford V-8 dump-trucks for use in keeping the city's streets and alleys clean. This group, organized in 1935, includes all employees of the city who are engaged in ash- and rubbish-removal work.

Seventy-five of the new trucks are 95-hp Truckstell-equipped cab-over-engine units with 10-yard bodies, while forty are conventional 85-hp units with 5-yard bodies.

In the accompanying illustration Herman J. Mayer, President of the "Knights," is at the left, and Louis Zeiter, Vice-President, is second from the left.

Newspaper Has Special Issue on Barber Plant

The *Perth Amboy Evening News* for Monday, May 15, 1939, issued a special Barber Asphalt Corporation Supplement of 10 pages, welcoming this corporation to Barber, close by Perth Amboy, N. J., where it has located its new attractive reinforced concrete office building and laboratories. The supplement contains stories on the Trinidad asphalt lake, the use of asphalt in antiquity as well as at the New York World's Fair of 1939, and welcoming articles and advertisements by various other industries and organizations.

W. F. White, Manager of Lighting Division

Westinghouse Electric & Mfg. Co., Pittsburgh, Pa., has announced the appointment of W. F. White as Manager of its Lighting Division at Cleveland, Ohio. Mr. White succeeds F. R. Kohnstamm, former Manager, who has been appointed Sales Manager of the Westinghouse Merchandising Division at Mansfield, Ohio.

Mr. White has been associated with Westinghouse since 1921 and with the Lighting Division since 1930. In March of this year he was appointed Assistant Manager of the Division. He was responsible for much of the design and engineering of the lighting equipment and spectacular displays of the Century of Progress in Chicago, the Great Lakes Exposition at Cleveland, and the New York World's Fair of 1939.

The "Knights of the Iron Horses" and Their 115 New Steeds Just Before the Parade in Detroit

The New G-E 18-Inch Searchlight for Floodlighting

Low-Cost Searchlight for Spot Floodlights

A simplified incandescent searchlight for long-range spot floodlighting has been announced by General Electric Co., Schenectady, New York, at a cost less than half that of previous conventional units. The new equipment was developed as a part of the floodlighting installation at the 1939 Golden Gate International Exposition, San Francisco, where several hundred of these lights are now being used.

Designed for 1,000-watt or 1,500-watt spotlight or floodlight lamps, the new unit gives about a 10-degree beam spread. The Alzak-finished aluminum reflector, aided by an auxiliary reflector which builds up the beam efficiency and redirects stray light, is essentially the same as that used in more expensive equipment. A tilting support for the auxiliary reflector simplifies relamping, and four hand-operated clamps secure the heat-resisting glass door, which is mounted in a cast-aluminum ring. The new searchlight comes equipped with 6 feet of 2-conductor No. 12 cable which has been approved by the Underwriters' Laboratory.

Toncan Offers Book on Subdrainage Pipe

A new 32-page book on subdrainage, written in textbook style, which justifies the need for subdrainage by pointing out the magnitude of the investments of public funds and private capital on and beneath the surface of the earth, has been published by Toncan Culvert Manufacturers' Association, Republic Building, Cleveland, Ohio. The book shows the need for safeguarding the stability of earth material against failure through the use of numerous types of subdrainage systems which are described at length and illustrated with many photographs and drawings of Toncan drainage pipe in service. A copy of this book may be obtained free by readers writing direct to the Association and mentioning this item.

NEW YORK SANITATION DEPARTMENT INCREASES EFFICIENCY WITH INDIAN DISPATCH CARS

Motorcycles for Inspection Speed Work, Cover More Ground

With 29 Indian Dispatch Cars, the largest purchase of its kind ever made, New York City joins Baltimore, Md., New Brunswick, N. J., and other progressive cities in using these fast, economical three-wheeled motorcycles to step up Sanitation Department efficiency. Inspectors on Indian Dispatch Cars cover four times the territory, do a better, quicker job, release other foremen for foot patrol in congested areas. Indian offers lowest operating and maintenance cost of any form of transportation. Write for details.

Indian MOTOCYCLES

INDIAN MOTOCYCLE COMPANY, SPRINGFIELD, MASS.

Sacramento Keeps Traffic Moving with Type D Traffic-signal Controllers

SACRAMENTO, California, has good reasons for using General Electric Type D traffic-signal controllers. They provide the traffic-movement sequences needed at any intersection, from the simplest to the most complex. Warren Telechron synchronous motors keep their timing accurate and make it possible for them to be used in progressive-flow systems without being interconnected. Sturdy construction and simple mechanical design keep maintenance down to almost nothing. Type D controllers are operating in cities and towns in 35 states, and in six foreign countries. Try this low-priced equipment in your city. For further information write the nearest G-E sales office, or General Electric, Schenectady, N. Y.

SEE THE G-E "HOUSE OF MAGIC"
New York World's Fair *San Francisco Exposition*

GENERAL ELECTRIC

A Few of the 200 V-G Lights Used for Night Work at the North Beach Airport on Long Island

Carbide Lights Speed New York Airport Job

A new, extensive modern airport is now under construction by the city of New York and WPA on Long Island, the many thousands of cubic yards of fill being placed by trucks and man-power working three shifts of eight hours each per day for more than a year. To make it possible for work to go on during the night, adequate illumination is necessary. Although the site of the North Beach airport is within range of electric power lines, during the early part of the work the ground was too unstable for the installation of the necessary poles, and after the poles were in, there were still many locations requiring some other type of illumination.

To furnish the portable illumination necessary, 200 X-100 V-G lights were purchased from the National Carbide Corporation, Lincoln Building, New York. These lights are economical, simple and easily charged, and readily portable. Since they are provided with automatic feed, they require no attention while in operation and give a pure white light from the start of operation until the last grain of carbide has been consumed. On a job of this kind the lights are handled very roughly, and even though these V-G lights are tipped over, there is no loss of gas.

A shack at the center of the airport is used for servicing all portable lighting equipment each morning. A regular crew inspects and recharges the lights, makes any minor repairs that may be required, and delivers them where they are to be used the following night.

Cement Association Wins National Award

The American Trade Association Executives Award for 1939 has been awarded to the Portland Cement Association, Chicago, Ill., for the development of soil-cement roads. This award is made each year to the trade association which has rendered outstanding service to its industry, to industry in general, and to the public, in the opinion of The American Trade Association Executives. The medallion representing this honor was presented to William M. Kinney, Vice-President and General Manager of the Portland Cement Association, by Edward J. Noble, Executive Assistant to Harry L. Hopkins, Secretary of Commerce, at the recent spring meeting of the Trade Association Executives in Washington, D. C.

Valuable Booklet on Water-Meter Practice

A 108-page booklet, "An Outline of Water Meter Practice," by Henry Horandt, C.E., Meter Engineer, North Atlantic Division, Federal Water Service Corporation, and Manager, New York Water Service Corporation, has just been published by Neptune Meter Co., 50 West 50th Street, New York, and is available to readers of THE AMERICAN CITY writing direct to Neptune and mentioning this item.

The contents of this publication cover all the features of the selection, testing and repair of meters that any meter department in any city of any size may wish to know. There are many illustrations and diagrams helpful in explaining the text and data tables worthy of careful study by water-works operators, engineers and officials.

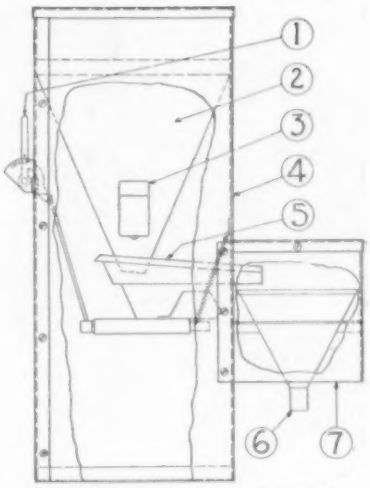
The major topics discussed include: Types of Meters and Their Characteristics; Testing and Repair Shops; The Testing of Water Meters; Test Standards; Meter Repair Methods; Length of Service of Meters; Selecting the Proper Type and Size of Meter; Field Testing and Maintenance Methods; Meter Reading and the Meter Scrutinizer; and the importance of metallurgy in reducing the corrosion of the various metals used in the manufacture of water meters.

New Chemical Feeder for City Water Works

A new model of a vibratory dry chemical feeder for city water works, as well as for sewage-treatment plants, has been announced by Syntron Co., 430 Lexington Avenue, Homer City, Pa. This machine is similar to earlier Syntron dry chemical feeders except that it is of smaller capacity, designed for use where the dosage of chemicals is not heavy enough to warrant the expense of larger-capacity machines.

The machine is made up of a dust-type cabinet carrying a 3 cubic-foot supply hopper equipped with a noiseless electric vibrator to prevent any arching over and plugging in the hopper. There is also a vibratory feeder conveyor trough for discharging the material at the desired rate. The feeder trough discharges into an earthenware, vortex-type solution pot contained in an extension of the cabinet enclosure so that the moisture around the solution pot will not affect the material in the main part of the machine.

The top of the cabinet is designed so that the hopper can be sealed to an overhead chute from a chemical room above.



THE NEW SMALL-CAPACITY SYNTRON DRY CHEMICAL FEEDER

1. Hopper opening adjustment. 2. Chemical hopper. 3. Vibrator. 4. Cabinet frame. 5. Feeder conveyor. 6-7. Solution pot and cabinet

A separate electric control panel is arranged for wall mounting away from the machine, containing the calibrated rheostat and ammeters for controlling and setting the rate of feed. The machine is designed for operation on 110-volt, 60-cycle, single-phase AC power supply and is economically priced, permitting installation even in small plants.

You can't get rid of
SLIMY SAM SEWER SLUDGE
with a shovel—

You gotta have an OK Champion Sewer Cleaner to clean out your sewer mains.

The hand models will get him positively, but the power machines will do it faster. You don't want to send men down to spend all day in the sewer when it isn't necessary. You can't endanger the health of your citizens by dirty sewers when the remedy is so easy. Your expensive sewage disposal plant can't do its best work when sewers are dirty and costly damage to the plant happens regularly with dirty sewers.

Many years of rains washing down street dirt, cinders, bricks, etc., eventually fill up any sewer. Finally comes the day of flooded basements, damage suits and hurry-up, unsatisfactory, emergency, temporary cleaning.

New York City, Atlantic City, Flint, Little Rock, Bay City, Duluth, Westfield, Jersey City, Akron, Midland, Gary and hundreds of other cities keep their sewers at full efficiency by routine machine cleaning with OK Champion equipment. The cost is very low.

Why not get your copy of OK Champion literature, now ready for you?

CHAMPION CORPORATION
4716 Sheffield Ave., Hammond, Ind.

NEW, MORE POWERFUL RADIO FOR YOUR CARS

28A-15 watt transmitter, 100% modulated, operates directly from 6 volt car battery. Quartz crystal control gives frequency stability of better than .02%. Built-in transfer relay permits use of one antenna for both transmitter and receiver. 9" x 11 3/8" x 17 3/8". Weighs 35 lbs.

Western Electric Police Radio is giving added protection to 45,000,000 people.

Now you can have Western Electric 2-way radio built to cover longer distances... for loud and clear communication even in bad-reception areas.

The new 228A equipment has a more powerful transmitter — crystal controlled — 100% modulated and a receiver with better noise suppression and higher speaker volume. Designed by Bell Telephone Laboratories this equipment has the same dependability and long life so characteristic of Western Electric Police Radio now in use from coast to coast.

Write for booklet giving full details. Address: Graybar Electric Co., Graybar Building, New York City.

Distributed by GraybaR

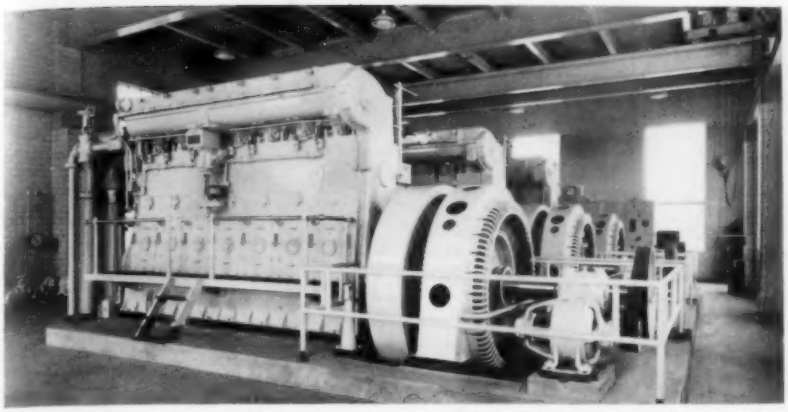
28A-10 tube superheterodyne receiver, self excited or crystal controlled beating oscillator. High sensitivity and selectivity. Operates on 6 volt car battery. Improved noise suppression and automatic volume control circuits give new clarity. 9 1/16" x 10 5/8" x 17 3/8". Weighs 26 lbs.

Western Electric

Distributed by GRAYBAR *Electric Co.* *In Canada: Northern Electric Co., Ltd.*

POLICE RADIO TELEPHONE EQUIPMENT

When you write for that catalog, kindly mention THE AMERICAN CITY.



Three Rathbun-Jones 7-Cylinder, 300-rpm, Sewage-Sludge Digester-Gas Engines Installed at the Columbus, Ohio, Sewage-Treatment Works, Driving 500-kw Generators

New Steel Clamshell for Handling Garbage

The use of clamshell buckets at municipal incinerating plants for re-handling garbage and rubbish from the dumping pit to the charging hoppers has led Blaw-Knox Co., Pittsburgh, Pa., to develop an improved power-wheel all-alloy steel bucket for this purpose. Five of these buckets were recently constructed for incinerators at Cedar Rapids, Iowa, New Rochelle, N. Y., Schenectady, N. Y., and two for Cincinnati, Ohio.

The new buckets are 1½ cubic yards capacity of the power wheel type, and weigh 3,950 pounds each. They are built for fast action and low headroom conditions, with a liberal spread to reach the ends of the pits. Circular wearing pads on the sides of the scoop protect the rivet heads from abrasive contact with the concrete sides of refuse pits. The four corner bars all go to the head pin and are placed so as to minimize the possibility of wear through bumping against abrasive parts of the structure.

A new feature is the use of cable rather than chain on the power wheel, the cable being connected with an equalizer in the head. The re-design of the power wheel for the use of cable instead of chain is to reduce maintenance costs, and it also permits the use of good sections from worn-out hoisting lines, thus salvaging material.

The manufacturer reports that these are believed to be the first all-alloy incinerator buckets. The special alloy steel lips are constructed of material of 106,000 pounds per square inch tensile strength, a yield point of 80,500, elongation of 18 per cent in 2 inches, and reduction in area of 30 per cent.

Swimming Pool Filters, Pumps and Accessories

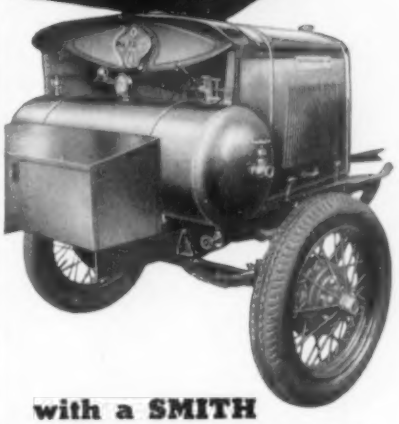
William B. Scaife & Sons Co., Oakmont, Pittsburgh, Pa., has recently issued a new 12-page illustrated Bulletin 305 containing helpful information on Scaife swimming-pool filtering and recirculating equipment, with specifications, descriptions, helpful tables and many diagrams and illustrations of re-circulating pumps, sterilizing equipment, hair catchers and pool cleaners.

Copies of this bulletin may be secured free on request by writing to the manufacturer and mentioning this item and magazine.

The New Blaw-Knox 1½-Yard Incinerator Buckets

Save

MONEY
TIME
SPACE



with a SMITH
AIR COMPRESSOR

priced at less than half the cost of standard compressors of equal capacity.

An extra margin of sturdiness, reliability and long life is built into a Smith Air Compressor. They're used the world over to replace expensive, cumbersome compressors on a majority of all compressor work. Sixty cubic feet a minute capacity—all the power you'll need to operate rock drills and paving breakers. Pressure up to 175 lbs. a square inch. Head equipped with high speed compressor valves; automatic unloading and idling. Uses only one gallon of gasoline per hour. Tow it, if you like, at permissible truck speeds.

With a Ford Motor and shop facilities you can assemble your own compressor. We will furnish a Smith Compressor Head and Accessories with instructions for mounting.

Write Today!

GORDON SMITH & CO.
425 COLLEGE STREET
BOWLING GREEN, KY.

THEY'RE GOING TO SELL THE WATER WORKS!

"Ridiculous!" you'd say. But there was a time a few generations ago when such an occurrence might have come to pass . . . because of ignorance of the true value of pure water to the community.

Today, citizens and officials alike recognize the value of *pure* water . . . so much so, that they take water purification as a matter of natural course.

They want the best and purest water obtainable. And one way of assuring the maintenance of the accepted high standards of today is to use the best purification materials that can be had.

Solvay Liquid Chlorine is a genuinely high quality product. Extreme care is exercised in its manufacture to insure complete freedom from impurities.

But almost as important as the Liquid Chlorine itself is the organization that stands behind it. Unusual service facilities are at your disposal . . . a well equipped Technical Service . . . adequate supplies, and a delivery system that is geared to handle emergency situations.

Write for complete information.

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LIQUID CHLORINE

A Dodge 133-Inch Wheelbase Chassis with Anthony 2-Cubic-Yard Body and Special Subframe for Mounting on Hump Frame of Chassis to Give Low Mounting

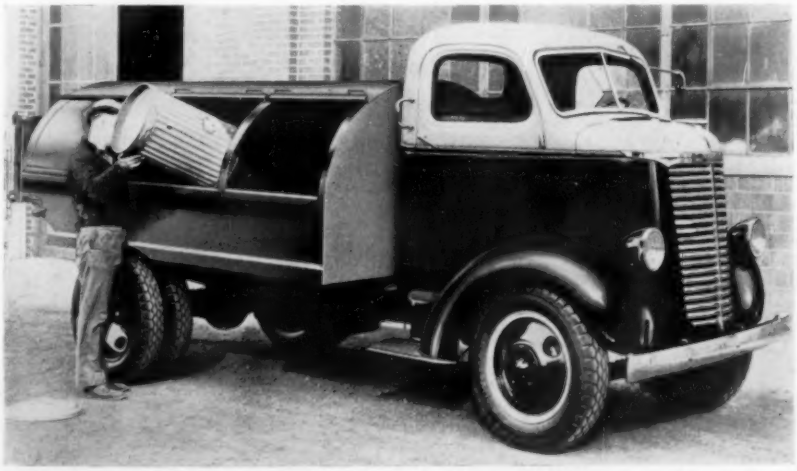
New Low-Loading Refuse Truck Bodies Designed for Municipal Use

Low loading height, the major feature most desired and demanded in sanitary body equipment, is the paramount requirement of city refuse-collection departments because it permits easier loading. Low loading height is the direct result of mounting height; that is, the distance between the top of the chassis frame and the bottom of the body. This dimension is controlled by the design and construction of the hoist; thus the lower the mounting height, the lower the loading height. The Anthony Company, Inc., Streator, Ill., through the use of a telescopic subframe as standard construction in its OK hydraulic hoists, has secured low loading height without sacrificing structural strength.

For the small community, the 2-yard Model D42 watertight scow end garbage body with hinged covers remotely controlled through a single lever, and shown above, is of interest. A Model S6 Anthony hydraulic hoist especially built for a 1-ton chassis is installed on this Dodge 133-inch wheelbase truck. The mounting height is only 14 inches. Since mechanical and structural differences exist in the 1-ton chassis with its hump frame, the OK hoist is not used, but a reasonably low loading height is secured by the use of smaller-sized tires.

In the truck illustrated below, larger tires, heavier springs and the higher chassis frame of the 1½-ton chassis do not help the loading height. It is therefore necessary to secure this by making the body wider or longer or decreasing the distance between the bottom of the box and the top of the chassis frame. The first two alternatives are limited both by law and chassis wheelbase, but nothing except tire clearance governs the latter. The body shown has a 9-foot bottom length and a 3-cubic-yard water-level capacity. This Anthony Model D50 with sliding steel covers and watertight tailgate has an extreme low loading height made possible by the use of the Anthony OKXL low-mounted hydraulic hoist, giving a mounting height of only 7¼ inches.

Either of these hoists gives a 70-degree dumping angle for dicharge of the load. About a dozen basic styles of garbage bodies are available with any one of eighteen sizes of OK hydraulic hoists ranging in capacities from 5 to 30 tons.



A Chevrolet 131-Inch Wheelbase Chassis with Anthony 3-Cubic-Yard Low-Mounted Body and Hydraulic Hoist

For Every Water-Raising Job

For fifteen years Peerless has been building, testing, developing —concentrating all its energies on the building of better, more efficient pumps. Today, in its new enlarged factory, Peerless manufactures a pump for every water-raising job—engineered and built with traditional Peerless insistence on quality, workmanship and protective features.

PEERLESS Propeller Pump (Water or Oil Lubricated) For handling tremendous volumes of water up to 100,000 gallons per minute from low and medium lifts. Used principally in drainage, flood control and similar service.

PEERLESS Hi-Lift Pump (Water Lubricated Only) For small capacities up to 90 gallons per minute. Utilizes an entirely new principle to develop extreme high pressures from small diameter wells at slow shaft speeds.

PEERLESS Turbine Pump (Water or Oil Lubricated) For every deep well pumping job up to 10,000 gallons per minute. Made in three types, Belturbo, Gearturbo and the famous Moturbo electric head, standard by which all others are judged.

In any service, Peerless Pumps are definitely different — demonstrably better. Ask any Peerless owner.

Factories:
LOS ANGELES, CALIF., SAN JOSE, CALIF.
FRESNO, CALIF. • MASSILLON, OHIO

★ WATER OR OIL LUBRICATION
Peerless
TURBINE PUMPS
FOOD MACHINERY CORPORATION
PERFORMANCE WITH ECONOMY

THE *Swing* IS TO HARLEY-DAVIDSON RADIO-EQUIPPED POLICE MOTORCYCLES

"We now have eight new Harley-Davidson Motorcycles and two Servi-Cars equipped with Ultra-High-Frequency receivers." Roy E. McConnell, Captain, Communications Dept., Evansville, Ind.

Saddlebag Harley-Davidson R.C.A. medium frequency or G-E ultra-high-frequency radio equipment. Perfectly balanced for easy handling of motorcycle. Equipped with heavy-duty, high-output generator and full automatic voltage and current regulator. Finest and most dependable radio equipment made. Model shown with new rear safety guard and streamlined rear wheel, foot-operated siren.

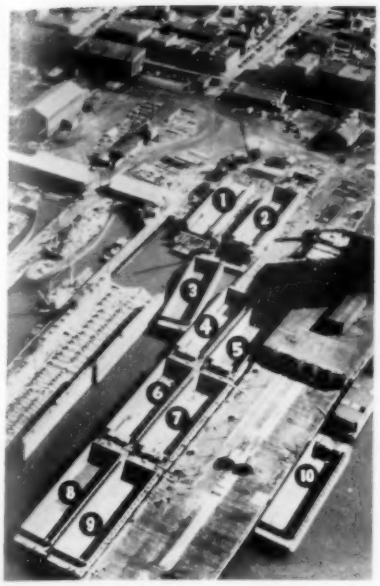
THERE are two important reasons why cities of all sizes — large and small — are turning more and more to the use of radio-equipped Harley-Davidson Police Motorcycles.

First, these superior machines have service-proved their quality, dependability, greater power, better performance, ease of handling, low-cost operation, maintenance economy — and wide range of uses in police work.

And second, the use of modern radio equipment multiplies their effectiveness in all branches of law enforcement and traffic control.

HARLEY-DAVIDSON MOTOR COMPANY
DEPARTMENT M MILWAUKEE, WISCONSIN, U.S.A.

HARLEY-DAVIDSON
THE POLICE MOTORCYCLE



Ten New Steel Barges for Ash Removal Under Construction by Brewer Dry Dock Co. for the Department of Sanitation of New York City

Welded Steel Barges for Moving City Ashes

Ten all-welded steel hopper-type ash-removal barges have recently been completed for the Department of Sanitation of New York City by the Brewer Dry Dock Co., of Mariners Harbor, Staten Island, using ten 300-ampere arc welders made by The Hobart Brothers Co., Troy, Ohio. The barges are 150 feet long, 37 feet wide and 12 feet 9 inches deep to the deck. For additional capacity they are fitted with a coaming 5 feet high, so that each one of these barges will replace two of the former wooden scows used for the disposal of ashes and rubbish.

The illustration shows the assemblage of eight barges in the water and two on the ways ready to be launched, of the total of thirty which are being built for this service. The thickness of the metal through the head logs and corners, when considering the fender bars which are self-imposed on the plating, amounts to 1½ inches, so that the barges will take a very substantial amount of hard knocks. They are painted with three coats in the double bottoms and the wings and in the peaks and the inside of the bottom shell up to a height of 6 inches on the framing with Bitumastic. The exterior painting is one coat of primer, two of anti-corrosive and one of anti-fouling for the bottoms and side up to the 8-foot line; above that the barges are given a four-coat job, using a No. 10 gray for the top sides and deck, and a No. 6 Tuscan red for the coaming and house.

The house on these barges provides a well-arranged cabin, with one room for galley equipped with oil range, sink and locker, table and chair; the sleeping quarters have a bed and clothes-lockers and toilet conveniences. The floor of the cabin is given an Asbesto-lith coating, and the roof a coating of cork. The insulation of the walls is Marinite.

The engine room, in the after peak below the cabin, is equipped with a 1,500-watt direct-current generator, direct-connected to a Kohler gasoline engine, and a 150-gpm Gould pressure pump for fire and bilge service, direct-coupled to a gasoline engine operating at 2,000 rpm and delivering 14 bhp; a vacuum pump is connected to the pressure pump base. Standard 2½-inch fire hose is provided, and a long length of suction hose is furnished with each barge.

A powerful searchlight is furnished with the barge and, in addition to a plug connection and stand attached to the house for this searchlight at the after end of the barge, there are also plug connections on each side of the forward end of the barge. A steel battery room equipped with 16 cells of Exide battery is located in the engine room. Liberal stowage spaces of steel floor plate are provided in both peaks for rope, lamps, paints, and other portable equipment, and a 650-pound anchor is provided on an inclined saddle on the forward deck as a safety measure.

Anniversary Dinner to New York Manager

A Silver Anniversary dinner commemorating 25 years of service as New York Manager for his company was tendered on May 1 to E. J. Ferris, Metropolitan Manager and Director, Addressograph-Multigraph Corporation, 1200 Babbitt Road, Cleveland, Ohio, by present and former employees of his office. The dinner was held at the Hotel McAlpin in New York City. In addition to all New York office employees of both the Addressograph and Multigraph divisions of the company, twenty former New York office employees who served under Mr. Ferris and who are now holding responsible managerial positions with the company were present.

Joseph Edgerton Rogers, President and General Manager of the Addressograph-Multigraph Corporation, who because of his absence abroad could not attend the dinner, sent a congratulatory cable to Mr. Ferris. W. K. Page, Vice-President and Director, Addressograph-Multigraph Corporation, and President of the Office Equipment Manufacturers Institute, was present and paid tribute to Mr. Ferris' 25 years of productive effort in New York City.

Cooper-Bessemer Diesels Ordered for Clinton, Mich.

The Cooper-Bessemer Corporation, Mount Vernon, Ohio, recently received an order for two Type LT diesel engine generating units for installation in the new municipal power plant being constructed at Clinton, Mich. The two units will consist of seven-cylinder Cooper-Bessemer diesels, rated 730 hp at 257 rpm, driving Ideal Electric Co. 630 KVA generators and V-belt-driven 15 kw exciters. The Fargo Engineering Co., Jackson, Mich., are engineers for this PWA project.

South Bend
31 YEARS EXPERIENCE
STREET FLUSHERS
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STREET SPRINKLERS
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GUTTER SNIPE
Pickup Sweepers
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BITUMINOUS MATERIAL DISTRIBUTORS
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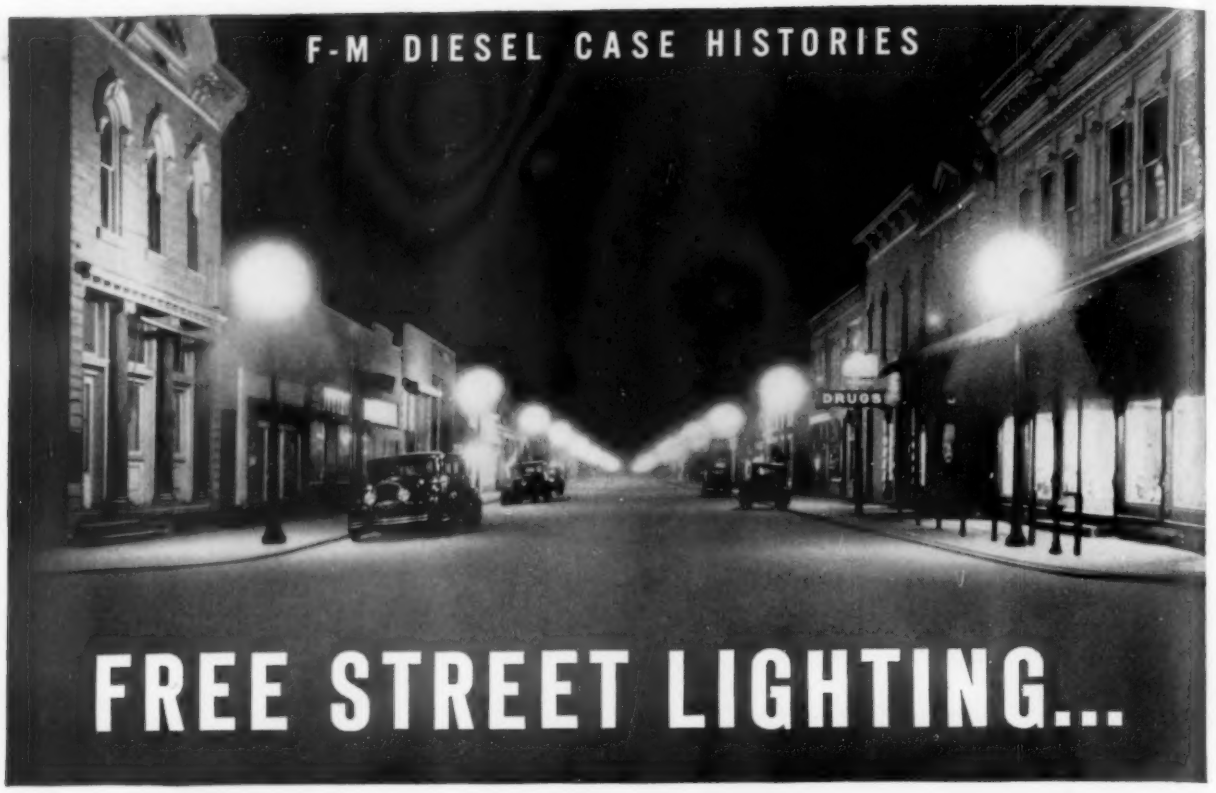
MUNICIPAL SUPPLY COMPANY
SOUTH BEND, IND.

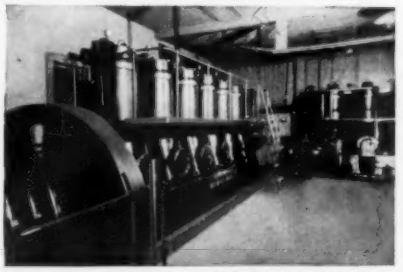


Plus $10,000 Annual Profit for Wilson, Kansas!

WILSON, KANSAS is one of the best-lighted towns in the state. Whiteway posts for the street lighting system were purchased with money from the electric light fund—and no charge is made against the city for electricity used for street lighting or other municipal purposes. The city tax rate has been slashed more than 55%. New street curbs and gutters have been paid for entirely out of plant earnings. And in addition, the town's F-M Diesel-equipped municipal generating plant shows an average operating profit of more than $10,000 a year!

Things weren't always like this at Wilson. When the town's steam-operated municipal light plant proved a financial failure, it was decided to install a Fairbanks-Morse Diesel generating unit. So successful did this venture prove that three years later a second F-M Diesel was purchased. In three more years, the plant had so regained its financial balance that the town paid cash for a third F-M Diesel—completely eliminating all steam equipment.

What Wilson has done is not unusual. F-M Diesel electric units have been establishing records like this right along. Find out what F-M Diesel power can do for your town. Write Department 1, Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago, Illinois. Branches and service stations throughout the United States and Canada.



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DIESEL ENGINES
PUMPS
ELECTRICAL MACHINERY
FAIRBANKS SCALES
RAILROAD EQUIPMENT
WATER SYSTEMS
WASHERS-IRONERS
FARM EQUIPMENT
STOKERS
AIR CONDITIONERS

F-M

Diesels

When you write for that catalog, kindly mention THE AMERICAN CITY.

Propeller-Type Meter on Palos Verdes Feeder

The Metropolitan Water District of Southern California is installing a 36-inch Sparling standard propeller-type meter with a range from 2 to 50 million gallons per day in either direction, with forward and reverse flow recorders, on the feeder line terminating in the Palos Verdes reservoir. The feeder, which will serve the Los Angeles area, is a 51-inch welded pipe, mortar-lined, and a section will be tapered to 36 inches at the point of meter installation.

When the consumption in the Los Angeles area is greater than the volume entering from the Colorado River aqueduct, the difference will be supplied by the outflow from the reservoir. Similarly, when the consumption is less, the surplus water will go into the reservoir. Hence the need for measuring equipment that can handle either forward or reverse flows over a wide range. Dual instruments for totalizing, indicating and recording are located in a cast steel housing with an overhead-swing front-plate, so that the whole measuring equipment will withstand weather. Seven-day charts and indicators, also furnished by R. W. Sparling, 945 North Main Street, Los Angeles, Calif., will show flows from 10 to 75 cfs operating by cable control from the meter without electric connection.

Pittsburgh-Des Moines President Dies

William H. Jackson, President of the Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa., died on April 26 after a short illness. After graduating from Iowa State College in 1891, he formed a partnership with B. N. Moss at Des Moines, Iowa, for the purpose of constructing water-works systems. In 1900 the firm merged with E. W. Crellin and was called the Des Moines Bridge and Iron Works. In 1908 a plant was built at Pittsburgh, and in 1916 the name was changed to Pittsburgh-Des Moines Co. Mr. Jackson served as President from 1921 until his death. Mr. Jackson was a member of the American Society of Civil Engineers and the Engineers Society of Western Pennsylvania.

World's Largest Circus Now Air-Conditioned

Eight brightly-painted trailers have been added to the traditional wagon line of Ringling Brothers and Barnum & Bailey Combined Shows, carrying not lions and tigers but compact modern apparatus for air-conditioning the grandstand under canvas. Equipment for both heating and cooling the air is installed at each of the eight wagons. Air is drawn in by large centrifugal fans washed by sprays of cold water or heated, as required, and blown through canvas ducts with aluminum grilles into the tent from above the heads of the spectators.

The entire equipment was furnished by the Buffalo Forge Co., Buffalo, N. Y. For heating, hot water from a General-Electric oil furnace boiler is circulated through a heating coil located at the inlet of the fan. The pump normally used for spraying water over the ice bunkers is used for circulating water from the oil furnaces through the hot-water heating coils. Each wagon is a self-contained unit, including a 15-gallon oil storage tank and expansion tank, and each has a set of twin ducts and grilles leading into the tent roof. The trailers and ice bunkers were purchased from the Southern Iron and Equipment Co. at Atlanta, Ga.

On each trailer is mounted a Buffalo-Forge "Limit-Load" fan handling 17,000 cubic feet per minute and driven by a 3-hp motor. The fan pulls air through an air washer made of 3/16-inch iron fabricated in one piece in order to eliminate the possibility of leaks caused by extreme service requirements. A pump driven by a 3-hp motor sprays 150 gallons per minute of chilled water in the air washer to cool and dehumidify the air delivered to the big top. Another pump driven by a 2-hp motor takes water from the tank of the air washer and sprays it over the ice in the ice bunkers to cool the water to the desired temperature. The bunkers can be charged with 6,000 pounds of ice, and it is estimated that under extreme conditions 20 tons of ice will be melted each hour in the eight conditioners to provide comfort for the huge audiences on sweltering summer days.

Traffic Lane Markers of Stainless Steel

Rustless steel traffic lane markers for use on asphalt, macadam, rock asphalt, tarbound, brick, concrete, wood block and other types of streets, are made in two sizes by Shunk Manufacturing Co., Bucyrus, Ohio. These rustless markers consist of three parts, which are shipped unassembled.

The pin or anchoring spike is forged and makes a drive fit through the marker plate and washer. There is an enlargement or bulging in the mid-section of the pin, with concaved sections diametrically opposed. When the spike is driven into a street, the enlargement displaces some of the paving material, which creeps back and surrounds the spike, thus embedding it tightly. The inner and outer concentric flanges of the annular disc support provide a rigid and substantial support for the marker plate. It is made of heavy-gage metal pressed into its proper shape. The concave, convex marker disc is 4 inches in diameter, while the smaller one for use in spelling out traffic instructions is 2⅜ inches in diameter and uses the same anchoring spike without a support washer.

American Water Works Association
Meets June 11-15
at Atlantic City

SAF-T-EYE

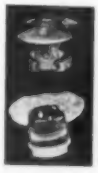
Knowledge Is Safety

If we know the danger, we know how to be safe—at least as safe as possible under the circumstances. Night driving is more hazardous than day driving, because we have less knowledge of the road.

Provide the night driver with more information, and the night accident rate will rapidly decrease.

USE SAF-T-EYE

Products for Night Driving Safety



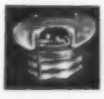
1. Box dangerous intersections with SAF-T-EYE road markers.

2. Mark railroad crossings with an "X" in the lane of traffic.

3. Mark center line of road where foggy conditions prevail and where dangerous curves exist.

4. Mark islands with curb markers and also mark curbs in the same manner through parkways, etc.

5. Use permanent opal glass street markers for parking lanes and pedestrian crossings.

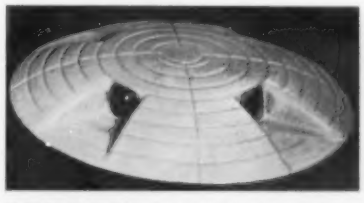


6. The SAF-T-EYE road marker is also made in a style that is replaceable, if preference dictates such type. This replaceable style can be removed and a cap inserted.

7. For one-way streets or roadways where reflection is required in one direction only, we have the SAF-T-EYE city traffic marker. This marker is also of value in marking pedestrian crossings.

8. For safety zones, such as street car safety islands, use SAF-T-EYE Saf-T-Zone marker.

9. Use light reflecting intersection markers as a warning and to prevent cutting corners.



SAF-T-EYE CO., INC.
c/o The Phoenix Glass Co.
Monaca, Pa.

Gentlemen:

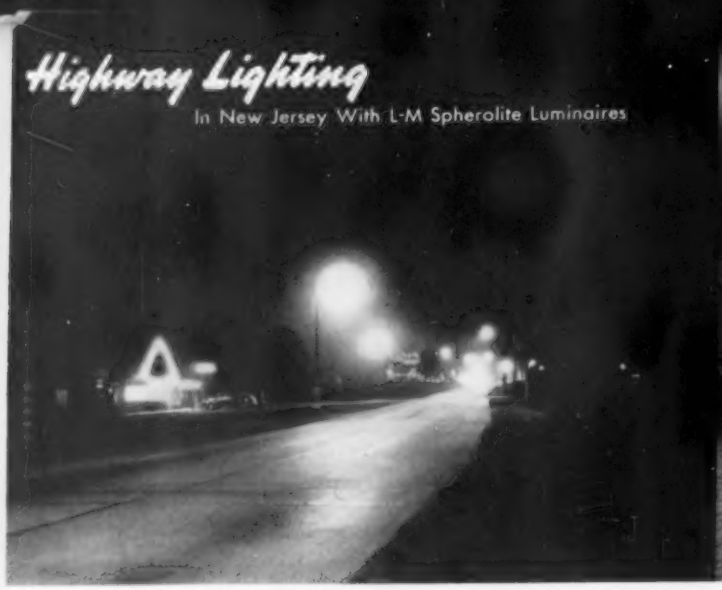
Kindly send additional information with reference to

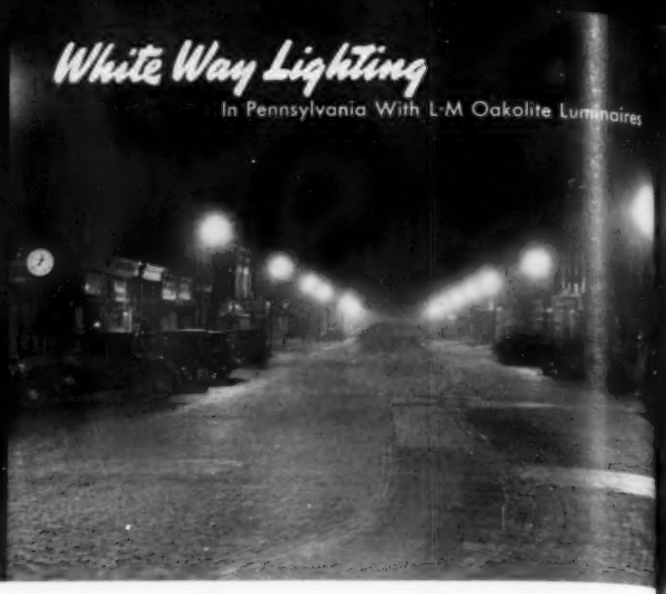
No. 1 ☐ No. 2 ☐ No. 3 ☐
No. 4 ☐ No. 5 ☐ No. 6 ☐
No. 7 ☐ No. 8 ☐ No. 9 ☐

Name .....

Address .....

City .....





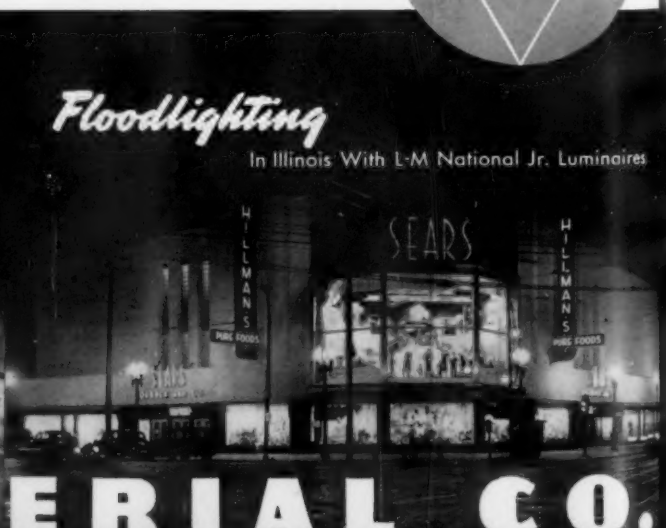
EVERYTHING YOU NEED

FOR EVERY TYPE OF

Outdoor Lighting

Not only the latest, most efficient designs in standards and luminaires, but transformers, cutouts, relays, glassware, time switches... everything for effective outdoor lighting. Write to Main Offices, South Milwaukee, Wisconsin, for outdoor lighting information.

LM



LINE MATERIAL CO.

Outdoor Lighting

A Section of The American City
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks and the Floodlighting of Public Buildings

Lower Speed Limit at Night

Astronomical Switches Tell When to Slow Down and Pick Up

By F. J. Seburn
Traffic Engineer, Kansas City, Mo.

On January 23, 1939, Kansas City ventured on a trial of selective legislation in which it was recognized that there is a vast difference in day and night driving conditions in any city, no matter how well the streets are lighted.

Theretofore our speed laws provided for a basic speed of 25 miles per hour over the entire city with a provision that allowed a maximum speed of 35 miles on through streets. These streets are all protected with stop signs or signals at each entering artery.

The new rule requires that the speed on through streets be reduced to 25 miles per hour during the period from 30 minutes after sunset until 30 minutes before sunrise. This plan was adopted because the street lights are all turned on and off by astronomical time-clocks at those times, and the driver can know when to reduce his speed merely by observing whether or not the street lights are burning. Thus it is possible to take advantage of the varying hours of daylight without asking the drivers and officers to carry almanacs in order to determine when the lower speed limit applies, and leaves room for no question as to whether or not the driver should be proceeding at the lower speed.

Simple Lighting Contract

The street-lighting system of Kansas City in its entirety is the property of the Kansas City Power and Light Co., which is under contract to the city for the installation, operation, and maintenance of all street lights and traffic signals. The contract covers those in service, and provides for the addition of more units, or larger present units, the authority for such changes being vested in the Director of Public Works. This eliminates the red tape of passing an ordinance by the City Council in connection with each light.

The contract provides for all sizes and types of construction, and rates for each type, so that procedure of installation is made very simple, the units all being standardized under terms of the contract. In the event of selection of a new unit not included in the contract, an ordinance is passed as an amendment to the original contract and ordinance.

The service to be furnished by the utility under the terms of the contract is of the utmost importance to the city. The company agrees to furnish, to the best of its ability, first-class, modern city lighting service, equal to the best lighting service furnished in any city in the country. The following important subdivisions are set up in the contract:

(1) Primary business section; (2) Secondary business section; (3) Primary trafficways; (4) Secondary trafficways; (5) Boulevards; (6) Parks; (7) Country Club residential; (8) Standard residential; (9) Special, such as highway entrances.

During the several years of their operation, these time switches have proved very advantageous, assuring us of uniform street lighting throughout the year regardless of when the sun rises or sets.

Too Many Night Crashes

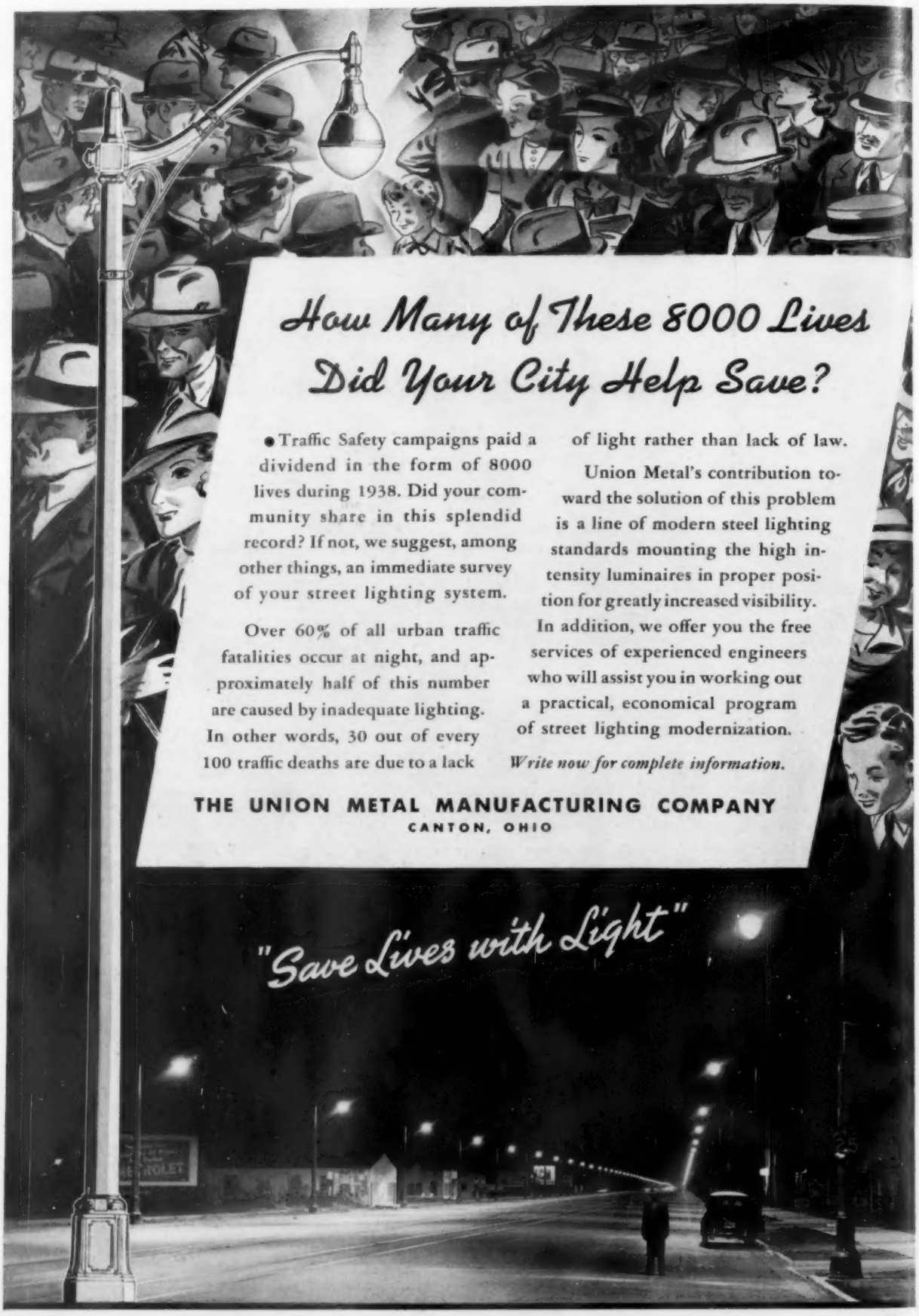
The accident records indicated that with approximately one-third of the 24-hour volume of traffic on the streets, almost three-fourths of the fatal accidents occurred at night. The majority of these accidents involved pedestrians attempting to cross through streets on which a maximum of 35 miles per hour was allowed, and most of these cases involved motor vehicles which were not exceeding this speed limit. Evidently 35 miles was too fast for safety. Therefore it was decided to make a test of a reduced speed limit for night driving only.

Rather than ask our City Council to amend the traffic ordinance, we decided to do this by a regulation issued by the Director of Public Works. His authority provides that an emergency regulation can be made and remain effective for a 60-day period, at the end of which time it must be submitted to the City Council for approval. This regulation became effective January 23.

Accidents Drop

During the two months following, there was a marked decrease in the night accident rate. For the month of last March, 37.1 per cent of the total accidents reported were during hours of darkness. This is only a slightly higher percentage than is to be expected in accordance with the volume of traffic found in our streets for the same period. In January, most of which was spent under the old rule of 35 miles per hour speed limit for both day and night on the through streets, the relative percentage of night accidents was practically the same as in 1938.

This has been decreased in 1939 un-


How Many of These 8000 Lives
Did Your City Help Save?
● Traffic Safety campaigns paid a dividend in the form of 8000 lives during 1938. Did your community share in this splendid record? If not, we suggest, among other things, an immediate survey of your street lighting system.
Over 60% of all urban traffic fatalities occur at night, and approximately half of this number are caused by inadequate lighting. In other words, 30 out of every 100 traffic deaths are due to a lack of light rather than lack of law.
Union Metal's contribution toward the solution of this problem is a line of modern steel lighting standards mounting the high intensity luminaires in proper position for greatly increased visibility. In addition, we offer you the free services of experienced engineers who will assist you in working out a practical, economical program of street lighting modernization.
Write now for complete information.
THE UNION METAL MANUFACTURING COMPANY
CANTON, OHIO
"Save Lives with Light"

til we have 44.1 per cent of injury accidents at night as compared with 57 per cent in 1938.

The approval of the City Council was unanimous.

These tests show that in one case the gas consumption was increased 23 per cent while there was only 11 per cent of the time saved, and on another run the gas consumption was increased 17.2 per cent, while only 8.5 per cent of the saving in time resulted. It might be argued from these figures that the 25-mile per hour speed would be high enough at *all* times. But we feel that this would partially defeat our original purpose—to emphasize by positive legislation the vast difference between day and night driving conditions.

The 35-mile speed has not proved to be a hazard for daylight driving conditions, and as this is the time when practically all business is conducted, the saving in time involved might mean considerable in the aggregate.

Finally, it has been proved in the past that restrictions that are only effective at times and places when they are necessary command a great deal more respect from the motoring public, and reasonable speed restrictions should be no exception.

Floodlighting!

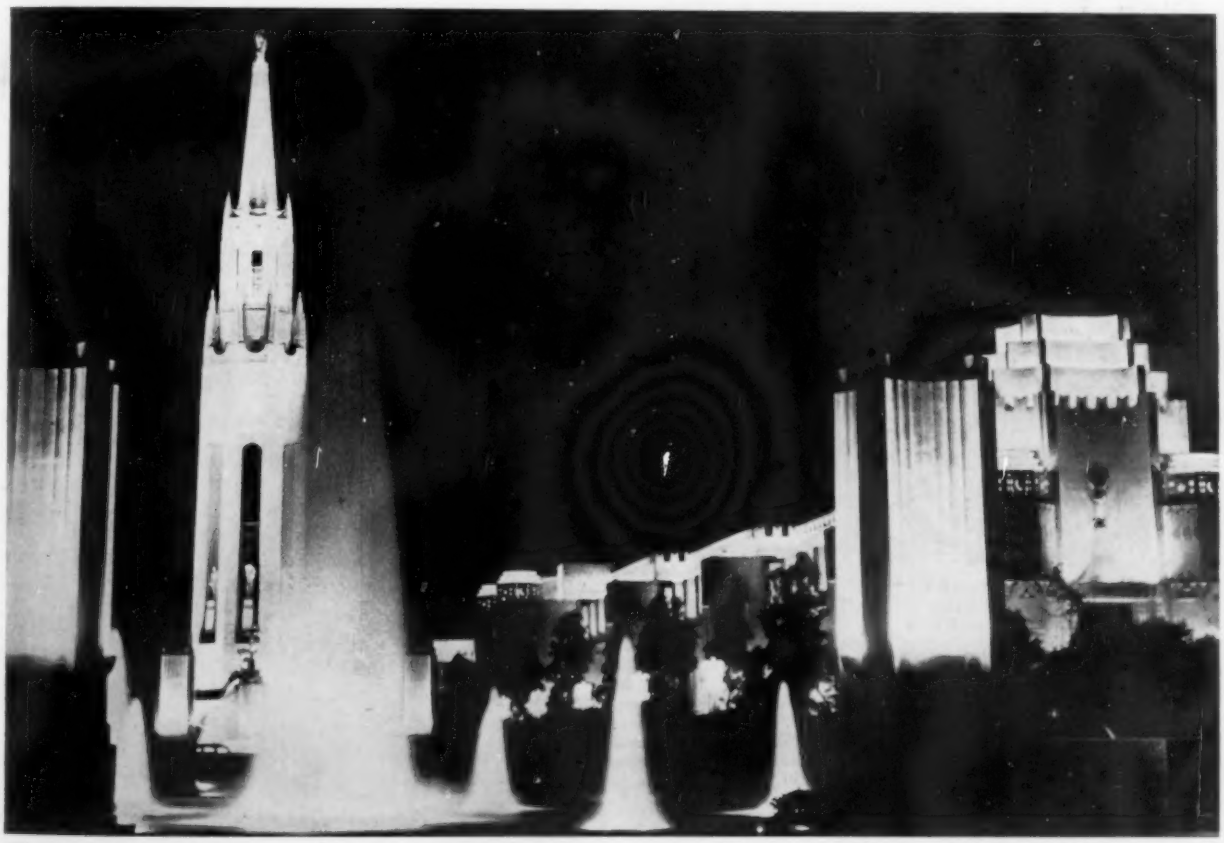
A Much-Neglected City Advertising Factor

FLOODLIGHTING is the best method of compelling attention after dark. Its many municipal uses have only begun to be realized, though more and more railroad crossings and other dangerous intersections, athletic fields and playgrounds, swimming pools, parks and gardens, monuments and public buildings, are becoming visible and attractive at night, frequently more so than by day.

Successful floodlighting must be done with knowledge and determination. Halfway measures waste result. Arthur Mansell, of the Edison Swan Electric Co., Ltd., points out that the floodlighting of a white building may be rendered almost valueless if the buildings adjacent are receiving a large quantity of street light. In such a case, very effective results may be attained by lighting the upper portion, or lighting the entire building with a color. It costs more to use color, but the effect can be striking. A number of buildings floodlighted in a number of colors cease to be merely an advertisement of a single structure or business establishment, and become an advertisement of the entire city, attracting people from greater distances and making the night life an experience.

Color Lighting Practical

Long practical strides have been made in the illuminating engineering field in the last few years, and never before has the accomplishment been more satisfying than now. Sodium vapor, mercury vapor and the new light sources with florescent bulbs are three achievements which not only supply the routine needs of safety and labor, but vastly extend the possibili-



Illumination of the Golden Gate International Exposition, on Treasure Island in San Francisco Bay, Has Drawn More Favorable Comment Than Any Other Part of the Fair, According to a Survey by McCann-Erickson Corporation, Made in Key Cities of California. The Exterior Illumination Was Planned by A. F. Dickerson of the General Electric Co., One of America's Foremost Illuminating Engineers, Who Transformed Treasure Island at Night into " a White Magical City, and an Isle of Nocturnal Enchantment Afloat on Beautiful San Francisco Bay." The Photograph Shows Fountains in South Gardens, with the Palace of Homes and Gardens in Right Background and at Left the Tower of the Sun

"You see, it was this way, Your Honor"

I was driving along in the heavy rain, going about 30. It was dark, and I couldn't see very well.

Suddenly, the lady was right in front of my car—came out of nowhere, it seemed.

I jerked my wheel toward the curb—I didn't see the parked car until just before I hit it. Officer Ryan was right there.

Next thing I knew, Officer Ryan was helping me out of my car. I couldn't tell him exactly how it all happened, because I hadn't seen enough to know.

I'm convinced that good street lights would have prevented it. The man who lectured on safety lighting at the auto club, Tuesday, knew what he was talking about.

YOUR Honor, Mr. Armstead isn't stretching the story a bit. He hit the parked car to avoid running down a careless pedestrian whom he didn't see until almost too late. The accident might easily have been fatal—many like it are—and the cause of it all was poor visibility. The street lighting on many streets doesn't give the motorists the visibility they need. Headlights alone aren't enough. Modern street lighting is badly needed. If you'd like to know how other cities have saved lives with modern lighting, send the coupon to General Electric Company, Schenectady, N. Y.

Seven times as many persons were killed at night as in the daytime on 31 miles of dangerous streets in Detroit. Since safety lighting was installed, this ratio has dropped to 1.5 to 1. Lighting is credited with the prevention of 28 accidents on 16 miles of Syracuse, N. Y., streets in three months, and a 48 per cent reduction in night accidents on 10 miles of streets in Hartford, Conn.

General Electric, Department 6—201, Schenectady, N. Y.

Please send me a copy of your publication GEA-2870, "A Proved Plan for Saving Lives."

Name .....

Street .....

City ..... *State* .....

GENERAL ELECTRIC

tics in floodlighting cities for better business and greater enjoyment.

The vapor lamps make color floodlighting available at costs reasonably comparable with white or natural incandescent floodlighting. Taking the latter as $1, the relative cost of providing present commercially available colors compares as follows:

	Discharge Lamp	*Mazda with Color Screen*
Bluish white	$0.35	$1.90
Light blue	1.20	3.50
Dark blue	3.40	10.00
Light green	1.20	3.50
Dark green	1.60	4.00
Red (Neon)	1.60	3.40
Yellow (sodium)	0.30	2.30
White (tungsten)	—	1.00

The next step after monochromatic color floodlighting is a blending of colors, which by means of improved projectors, color screens, and motor-driven flashers and dimmers, can be accomplished at reasonable operating cost. Already a cycle of color changes can be had from a single projector.

The distinctly practical character of large-scale floodlighting is indicated by the availability commercially of the equipment which does it, and the rapid improvement of this equipment. A floodlighted monument is so practical as to be a routine performance though pleasing to the public. A floodlighted building in white or in color is hugely enjoyed. Why not ten buildings? The entire city would be proud of them and of itself. All that is needed is for some one, two or three persons in the government, the chamber of commerce, the merchants association, to have the gift (1) to visualize in advance the attractiveness, and the business and the psychological values of a city on which the light need never die, and (2) to sell their true and practical vision to those who can act. Los Angeles could furnish such thinking in its regular day's work. San Francisco is in even a better position, having immediately at hand in its International Exposition one of the master strokes of floodlighting of the latest styles, conceived and directed by A. F. Dickerson, Manager of General Electric's Illuminating Laboratory.

Light-Conscious

Street lighting is booming throughout the country. Safety is the originating motive, with business values a close second. All municipalities are conscious of the need to throw real light on the mingled motor and pedestrian street traffic.

The highways are being lighted at a pace which foresees 50,000 miles of illuminated boulevards in the now visible future. These highways will encourage night driving for business and pleasure, going to town at night. Shall the people go to this town or that? What one has the greatest incentive? The cities must dress up at night for the sake of their citizens—and visitors, some of whom are prospective taxpayers as well as immediate buyers.

Theaters have always known the value of garish outdoor lighting. Restaurants knew the profit in skillful indoor lighting. Merchants learned from customers the desirability of daylight lamps. Now all have become conscious of it, if not all are yet sold on the extra profit in modern (1) store fronts, (2) outside lighting, and (3) particularly agreeable interior illumination.

In ten years the business districts of many cities will have been made over, and the process will have started again, for the individual business men, architects, illuminating engineers, equipment designers and salesmen, and the research men behind them, never quit. The ball is now rolling for better-lighted streets and buildings—outside as well as inside.

Already there are artists who can look along a street and point out and place on paper the omissions and additions needed to make that street beautiful as well as exciting. While making the plan, the artist will have in mind those architectural projections above the average skyline, and at the proper time will show what should be done with them to consolidate the complete lighting picture of Gramercyville. And if Gramercyville is the only city in the neighborhood having an organized night light picture, where do you think people will go at night? This is no blue-sky talk or moonlight serenade. There are such artists; there are illuminating engineers capable of translating their plan into light or lights; there are manufacturers whose shelves carry the latest devices for achieving this. Given close to carte blanche, such men have wrought marvels at those gorgeous mushroom World's Fair districts within San Francisco and New York. Given the practical objectives of the outdoors of a city to be illuminated in proportion as the cash return on the improvement equals its cost, they can furnish the answers and the job itself.

"Many Moons"

THE "Many Moons Over Brownsville" letter by A. E. Whalley, Jr., printed in the May, 1939, issue of THE AMERICAN CITY, described the new General Electric - Holophane - Union Metal lighting installation in the business district of Brownsville, *Tennessee*, instead of Texas as was stated.

Black Surface Well Lighted

GOOD results were obtained in lighting a very poor black street surface 3,500 feet long, by using sufficient intensity, at a cost of 40 cents per foot per year. We installed 22 General Electric Form 79 R units equipped with Holophane B-way rippled refractors. These luminaires containing 6,000-lumen lamps are mounted 20 feet above the street on steel poles furnished by the Charles N. Wood Co., Boston, spaced 150 feet apart in staggered arrangement.

HORACE H. BIGELOW,
Acting Superintendent of Street Lighting,
Worcester, Mass.

Young Business Men for Better Street Lighting

"SLOW down at sundown," said Earl J. Reeder, Chief Traffic Engineer of the National Safety Council recently to the Chicago Junior Association of Commerce. The driver must reduce his speed to conform with the visibility and the conditions of lighting under which he is driving at night. The primary function of good street or highway lighting is to silhouette objects against the brightened surface or highway of the road, and modern lighting must be properly designed to direct light onto the pavement and sidewalks, and not, as in the case of antique equipment, to dissipate it into the air.

The campaign of the Chicago Junior Association of Commerce is but one of those being conducted by similar organizations in 41 cities throughout the country as part of the national "Safety with Light" program of the United States Junior Chamber of Commerce endorsed by President Roosevelt a short time ago. The program has been designed to eliminate America's fatal streets, which, though they represent but 10 per cent of total city street mileage, account for almost 50 per cent of total urban auto fatalities. Philip C. Ebeling, President of the United States Junior Chamber of Commerce, expects that several hundred of their affiliated organizations will carry out "Safety with Light" programs during the next year or two. "I have never," he said, "seen an activity which seemed to meet a more general or vital need, or which has met with more immediate and enthusiastic acceptance."

Details of the program and information on how to proceed, how to obtain local support, and what modern street lighting is, are presented in a new 32-page illustrated booklet entitled "Safety with Light," supplied without charge by United States Junior Chamber of Commerce, Star Building, Washington, D. C.

Tangled traffic . . . with its constant menace to the work of police and fire departments . . . is only one part of the tremendous Public Safety problem faced by municipalities today.

Losses to person and property due to *preventable* traffic accidents, crime, and fire run to *billions* of dollars.

Efficient electrical Public Safety equipment can play an important part in preventing these losses . . . at only a tiny fraction of the present enormous cost of the losses.

Graybar offers a convenient source of *all* Public Safety equipment . . . Modern Traffic Control . . . Union Metal Street Lighting . . . Parking Meters . . . Horni Fire-Alarm Systems . . . Western Electric Police Radio. Graybar offers, too, experienced advice on technical problems, and behind every product stands a Graybar reputation for dependability since 1869. Write for information!

OFFICES IN 83 PRINCIPAL CITIES. EXECUTIVE OFFICES: GRAYBAR BUILDING, NEW YORK.

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PUBLIC SAFETY EQUIPMENT DISTRIBUTED BY GRAYBAR:

JULY, 1939

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The American City

City and Regional Planning of 1960
As Visualized at the
New York World's Fair
in the General Motors "Futurama."
(See pages 40 and 41 of this issue)